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THE CULTIVATOR.

"TO IMPROVE THE SOIL AND THE MIND"

Notice of Liebig's Organic Chemistry, applied to Agriculture.

It is but comparatively a few years since the opinion that science could do aught for agriculture was scouted by the great mass of mankind, and particularly by those most interested, the farmers themselves. The knowledge requisite for tilling the earth was supposed to come by instinct, or be hereditary, and the idea of improvement in husbandry was considered on a par with the vagaries of Paracelsus, or the seekers for the philosopher's stone. This is the more surprising, since the slightest investigation would have shown there is no pursuit of man where the deductions of science are more useful, or severe and carefully conducted experiments more likely to be amply repaid. The discovery of the bases of the alkalies by Davy, gave a new impulse to the inquiries which had been instituted into vegetable physiology, and that truly great man embodied the mass of facts he had discovered, and the theories deduced from them, in his volume on Agricultural Chemistry. That volume may be said to have opened a new era in the pursuit of Agriculture, showing as it did, that the most important operations of the farmer depended on a combination of physical and chemical causes. Great, however, as was the advance made by Davy, some of his theories were found untenable, some of the practices he recommended unsuitable; still inquiry had been awakened, scientific men had been taught that the application of science to agriculture was practicable and necessary, and the utility of improved processes in tilling the soil made apparent to all who were willing to investigate, or not too proud to be taught. The French, never behind where the discoveries or the applications of science are concerned, soon followed in the path marked out by Davy, and Count Chaptal, one of the ablest men France has produced, published his 'Chemistry applied to Agriculture,' a capital work, and one which is perhaps more generally known than any that has been written on the subject. It is one of the volumes in the excellent series issued in by the Harpers for School Libraries, and ought at least to be found in every school district in the state. Chaptal was aware that his work was imperfect, but the great learning and unwearied perseverance brought to the task by him, evidently left little to expect, until farther advances in science should give an additional impulse to the chemistry of agriculture. That time seems to have arrived. The vast resources of the German Universities, the patient research so characteristic of the people, the numberless discoveries which have been made in vegetable physiology, and the patronage and influence of the government have all been enlisted in the promotion of agriculture, and to effect this, no pains have been spared to ascertain the laws that govern the germination, nutrition, and consequent growth of plants. The results of these researches have been embodied in the volume, the title of which is placed at the head of this article. Prof. Liebig has given to the public a work to be read and studied; one that commands assent to the positions assumed by the clearness and force of the arguments; and which, if not correct in every particular deduction, will, we are confident, notwithstanding the novelty of some of the positions assumed by him, be found to be sustained in the main by facts and experience.

In the notice we propose to give of Dr. Liebig's volume, we shall endeavor to point out the most prominent features of his system, and as far as possible in his own language, certain that we cannot fill a page or two in a manner more acceptable to the intelligent readers of the Cultivator.

All former writers on the subject of Agriculture, have based their systems on the commonly received opinion, that the nutrition of plants is mostly derived from the vegetable mold, humus, or geine, existing in the soil. From this position Prof. Liebig dissents, and this difference it will be seen is fundamental.

Carbon, water, and ammonia, contain the elements necessary for the growth of plants and animals; the manner of their derivation is the point at issue. The carbon which constitutes the solid part of vegetables, has been attributed to *humus*, with the exception of the supposed small portion ascertained by Priestly, to be derived from the atmosphere in the shape of carbonic gas. The question is thus stated by Liebig:

"The opinion that the substance called *humus*, is extracted from the soil by the roots of plants, and that the carbon entering into its composition, serves in some form or other to nourish their tissues, is so general and firmly established, that hitherto any new argument in its favor has been considered unnecessary: the obvious difference in the growth of plants, according to the known abundance or scarcity of *humus* in the soil seemed to afford incontestible proofs of its correctness. Yet this position, when submitted to a strict examination, is found to be untenable, and it becomes evident from the most conclusive proofs, *that* HUMUS, *in the form in which it exists in the soil, does not yield the* SMALLEST *nourishment to plants.*"

The arguments used by Liebig, to establish this position, are based on numerous and varied experiments; such as the facts that pure *humus* is very sparingly soluble in water at any time, and if once dried, or even frozen, is perfectly insoluble; that the best mold when treated in water, leaves it colorless, and less than 100,000th part of organic matter is dissolved; that the quantity of *humus* in a forest or meadow is constantly accumulating, although a certain quantity of carbon in the shape of wood or hay is annually taken off; and that if the alkalies, lime, or ashes, fit it for assimilation, the salts so formed are so difficult of solution, that were all the water that falls on a field to be saturated with the *humates*, they would prove entirely inadequate to furnish the carbon of a field of wheat or beets.

Since then the carbon of plants cannot be derived from the soil, it is evident it must be derived from the atmosphere. The woody fibre of plants, partially decayed, is called *humus*, and *mold* is the product of this complete decay of the woody part of plants. Prof. Liebig says:

"In attempting to explain the origin of carbon in plants, it has never been considered that the question is intimately connected with the origin of humus. It is universally admitted that humus arises from the decay of plants. No primitive humus therefore can have existed, for plants must have preceded the humus. Now, whence did the first vegetables derive their carbon? and in what form is the carbon contained in the atmosphere?"

The conclusion to which Prof. Liebig arrives, is, that plants derive the carbon exclusively from the decomposition of carbonic acid, chiefly and often entirely supplied to them by the atmosphere. Humus or vegetable mold is only valuable as a source of carbonic acid, which it emits very slowly. Humus being the product of vegetable life, there is no more reason to suppose, that admitting it were absorbed by plants, it would aid in their nutrition, than that sugar, starch, and gum, which humus much resembles, should do so; but it is well known that these substances, although they may be absorbed by plants, are never assimilated, or in other words are never available as the food of plants. Prof. Liebig thus describes the office of humus:

"Humus supplies young plants with nourishment by the roots, until their leaves are matured sufficiently to act as exterior organs of nutrition; its quantity heightens the fertility of a soil, by yielding more nourishment in this first period of growth, and consequently by increasing the number of organs of atmospheric nutrition. Those plants which receive their first food from the substances of their seeds, such as bulbous plants, could completely dispense with humus; its presence is useful only so *far* as it assists and increases their development, but it is not necessary,—indeed, an excess of it at the commencement of their growth is, in a certain measure, injurious."

Although *humus* is thus divested of the high place usually assigned it in the nutrition of vegetables, still its functions are very important, and we add Prof. Liebig's account of these, illustrating as the extract does, the advantages of deep and thorough tillage:

"The decay of woody fibre, (the principal constituent of all plants,) is accompanied by a phenomenon of a peculiar kind. This substance, in contact with air or oxygen gas, converts the latter into an equal volume of carbonic acid, and its decay ceases upon the disappearance of the oxygen. If the carbonic acid is removed, and oxygen replaced, its decay recommences, that is, it again converts oxygen into carbonic acid. * * * Humus acts in the same manner in a soil permeable to the air as in the air itself: it is a continued source of carbonic acid, which it emits very slowly. An atmosphere of carbonic acid, formed at the expense of the oxygen of the air, surrounds every particle of decaying humus. The cultivation of land, by tilling and loosening the soil, causes a free and unobstructed access of air. An atmosphere of carbonic acid is therefore contained in every fertile soil, and is the first and most important food for the young plants which grow in it.

"In spring, when those organs of plants are absent, which nature has appointed for the assumption of nourishment from the atmosphere, the component substance of the seeds is exclusively employed in the formation of the roots. Each new radicle fibril which a plant acquires, may be regarded as constituting at the same time a mouth, a lung, and a stomach. The roots perform the functions of the leaves from the first moment of their formation; they extract from the soil their proper nutriment, namely, the carbonic acid generated by the humus.

"By loosening the soil which surrounds young plants, we favor the access of air, and the formation of carbonic acid; and on the other hand, the quantity of their food is diminished by every difficulty which opposes the renewal of air. A plant itself effects this change of air at a certain period of its growth. The carbonic acid, which protects the undecayed humus from further change, is absorbed and taken away by the fine fibres of the roots, and by the roots themselves; this is replaced by atmospheric air, by which process the decay is renewed, and a fresh portion of carbonic acid formed. A plant at this time receives its food, both by the roots and by the organs above ground, and advances rapidly to maturity. * * * *

"*The size of a plant is proportional to the surface of the organs which are destined to convey food to it.* A plant gains another mouth and stomach with every new fibre of root, and every new leaf."

The important practical inferences which may be drawn from these facts, will be apparent to every reflecting mind. The advantages of deep plowing, frequent stirring the surface, application of vegetable matter or manure, and the necessity of perfect seeds, present themselves at once.

Hydrogen is constantly present in the structure of plants, and is the base of the oils, gums, resins, caoutchouc, &c. As plants possess the property of decomposing water, and as there is no other body from which they could derive this substance, the hydrogen doubtless arises from this source. Nearly all vegetable structures contain hydrogen in the form of water, but the hydrogen which is essential to their constitution and the presence of the products named, cannot exist in them in the state of water, but is prepared by its decomposition. This furnishing a proper supply of hydrogen, is one of the important services which water renders to vegetation.

It has long been known that nitrogen acts a most important part in vegetation, but physiologists have not been agreed as to the manner in which it is furnished, or the source of the supply. In unravelling these mysteries, or in answering the question, "How, and in what form does nature furnish nitrogen to vegetable albumen and gluten, to fruits and seeds?" Prof. Liebig has been peculiarly happy, and this part of his work may be deemed the most original and luminous of his pages:

"Plants, as we know, grow perfectly well in pure charcoal, if supplied at the same time with rain water. Rain water can contain nitrogen only in two forms, either as dissolved atmospheric air, or as *ammonia*. * * * There are numerous facts showing, that the formation in plants of substances containing nitrogen, such as gluten, takes place in proportion to the quantity of this element which is conveyed to their roots in the state of ammonia, derived from the putrefaction of animal matter. * * * The nitrogen of putrified animals is contained in the atmosphere as ammonia, in the form of a gas, which is capable of entering into combination with carbonic acid, and of forming a volatile salt. Ammonia in its gaseous form, as well as all its volatile compounds, is of extreme solubility in water. Ammonia, therefore, cannot remain long in the atmosphere, as every shower of rain must condense it, and convey it to the surface of the earth. Hence also rain water must, at all times, contain ammonia, though not always in equal quantity. It must be greater in summer, than in spring or winter, because the intervals of time between the showers are in summer greater; and when several wet days occur, the rain of the first must contain more of it than that of the second. The rain of a thunder shower, after a long protracted drouth, ought for this reason to contain the greatest quantity, which is conveyed to the earth at one time."

We have often noticed the surprising effects produced by thunder storms on vines, such as the *Solanum dulcamara*, in giving a rapid growth, but while the theory of Liebig explains the cause, or at least one of them, we have been inclined to attribute much to the effect of electric agency in the matter, a fact perfectly consistent, as experiments prove that currents of electricity, by increasing the vital activity of plants, prepare them to receive nutrition more rapidly.

The great discovery made by Prof. Liebig, of the existence of ammonia in rain water, when its presence had never been suspected, was one of those happy applications of science to the investigations of causes affecting plants, which can scarcely fail of the best results in explaining many of the operations of tillage. Ammonia may always be detected in snow water. The inferior layers of snow which rest on the ground, always contain greater quantities than that on the sur-

face. "It is worthy of observation, that the ammonia contained in rain and snow water, possesses an offensive smell of perspiration and animal excrements—a fact which leaves no doubt respecting its origin."

Prof. Liebig's volume contains a great number of interesting details on the presence of ammonia in plants, thus proving that it is actually taken up by the roots, and in that form applied by their organs to the production of the azotized matters contained in them. Thus ammonia was obtained from maple sugar, the juice of the birch, the juice of the beet, the products of the distillation of flowers, herbs and roots, and the unripe gelatinous pulp of the peach and almond, contain it in quantities easily appreciable. In short there is scarce a vegetable tissue of any kind free from it.

"Animal manure," says Prof. Liebig, "as we shall afterwards show, acts only by the formation of ammonia. One hundred parts of wheat, grown on a soil manured with cowdung, (a manure containing the smallest quantity of nitrogen,) afforded only 11·95 parts of gluten, and 64·34 parts of amylin, or starch; while the same quantity, grown on a soil manured with human urine, yielded the maximum of gluten, namely, 35·1 per cent. * * * The barren soil on the coast of Peru is rendered fertile by means of a manure called *guano*, which is collected from several islands in the South Sea. It is sufficient to add a small quantity of guano to a soil which consists only of sand and clay, in order to procure the richest crop of maize. The soil itself does not contain the smallest particle of organic matter, and the manure employed is formed only of *urate, phosphate, oxalate,* and *carbonate of ammonia*, together with a few earthy salts."

The importance of nitrogen to plants intended for the support of animal life, may be inferred from the fact,

"That the quantity of food, which animals take for their nourishment, diminishes or increases in the same proportion as it contains more or less of the substances containing nitrogen. A horse may be kept alive by feeding it with potatoes, which contain a very small quantity of nitrogen; but life thus supported is a gradual starvation; the animal increases neither in size nor strength, and sinks under every exertion. The quantity of rice which an Indian eats astonishes the European; but the fact that rice contains less nitrogen than any other grain, at once explains the circumstance."

In practice then, that farmer will be the most successful who manages his manures, or the source of ammonia, in such a way that they will serve as a nutriment to his own crops. A heap of manure lying on the surface of a farm benefits the owner no more than it does his neighbors. The nitrogen escapes as carbonates of ammonia into the atmosphere, and the carbonaceous matter or decayed vegetable part is soon all that is left in its place.

Prof. Liebig's discovery of ammonia in water, has led to a simple yet beautiful explanation of the manner in which gypsum acts on plants. We gave some notice of this in the March No. of the Cultivator. Prof. L. says:

"The carbonate of ammonia contained in rain water, is decomposed by gypsum in precisely the same manner as in the manufacture of sal ammoniac. Soluble sulphate of ammonia and carbonate of lime are formed, and this salt of ammonia, possessing no volatility, is consequently retained in the soil. All the gypsum gradually disappears, but its action upon the carbonate of ammonia continues as long as a trace of it exists. * * * The action of gypsum or chloride of calcium really consists in their giving a fixed condition to the nitrogen—or ammonia which is brought into the soil, and which is indispensable to the nutrition of plants."

The substances named above as carbonic acid, water, and ammonia, are necessary to the existence of plants, as they contain the elements from which plants are formed; but there are other substances requisite for the formation of certain organs or parts destined for special functions. Plants obtain these substances from inorganic nature; and although in a changed form, the ashes left by incineration contain the salts and earths which are thus useful. There are numerous metallic oxides and phosphates, and alkaline bases, which are thus employed, and on the quantities of these contained in any given soil, the character of its vegetation will depend.

"All kinds of grasses contain in the outer part of their leaves and stalks a large quantity of silicic acid and potash in the form of silicate of potash. The proportion of this salt does not vary perceptible in corn [grain] fields, because it is conveyed to them again in the form of putrefying straw. But this is not the case in a meadow, and hence we never find a luxuriant crop of grass on sandy or calcareous soils which contain little potash, evidently because one of the constituents indispensable to the growth of the plants is wanting. Soils formed from basalt, graywacke, and porphyry are, *cæteris paribus*, the best for meadow land, on account of the quantity of potash which enters into their composition."

Without alkalies or alkaline bases most plants could not exist, and the roots of plants are constantly engaged in collecting from the rain, those alkalies which have been raised by vaporization from the sea; which according to Prof. Liebig, is the grand reservoir of these substances, and from which they are distributed over the earth by winds and clouds. According to Marcet, sea water contains chloride of sodium, sulphate of soda, chloride of potassium, chloride of magnesia, sulphate of lime, carbonic acid in a proportion 100 times greater than that of the air, and ammonia; "so that the same conditions which sustain living bodies on the land are combined in this medium, in which a whole world of other plants and other animals exist."

It is well known to the farmer, that when gypsum first came into general use, after a few years had passed, the substance was severely condemned as an exhauster of the soil, an opinion now exploded, and which finds no advocates among the intelligent, the exhaustion complained of arising not from the increased crops, but a defective culture. On this point, Prof. Liebig has the following just remarks:

"But when we increase the crop of grass in a meadow by means of gypsum, we remove a greater quantity of potash with the hay, than can, under ordinary circumstances be restored. Hence it happens, that after the lapse of several years the crop of grass on the meadows manured with gypsum diminish, owing to the deficiency of potash. But if the meadow be strewed from time to time with wood ashes, even with the lixiviated ones which have been used by soapboilers, (in Germany much soap is made from the ashes of wood,) then the grass thrives as luxuriantly as before. The ashes are only the means of restoring the potash."

A fine illustration this, of the cause which render leached ashes so valuable as a manure on the sandy soils of Long-Island or New-Jersey. The addition of the alkali gives rise to the formation of silicates of potash, without which the stems of the grasses, or the cereal plants cannot be formed.

The growth and development of plants is, therefore, depending on the presence of alkaline earths, or alkalies; and the growth will be rapid, and the development perfect in proportion to the existence of the proper quantity. Hence too plants, which require but a small quantity of these substances, will grow and flourish where other plants would perish. Every one is aware, that firs and pines will grow on barren granite or sandy soils, and find potash enough for their use, while oaks will not flourish on such soils. The examination of 10,000 parts of oak wood yield 350 parts of ashes, the same quantity of fir wood only 83 parts. The numerous instances given by Liebig, of the importance of these alkaline metallic oxides on vegetation, show beyond controversy, that their influence has been too much overlooked. It has been thought remarkable by some vegetable physiologists, that those cereal grasses which furnish food for man, should as it were, follow him wherever he goes. The reason is to be found in the fact, that none of our grain plants can produce perfect seeds, or seeds yielding farina, without a greater supply of phosphate of magnesia and ammonia, than can be found in regions where these salts, resulting from organized vitality, are less abundant. It follows that wherever men abound, these plants find their proper food and follow in their train, with the certainty and regularity of the domesticated animals.

The part of Prof. Liebig's volume, devoted to the art of culture, is well worthy the study of the farmer. After a description of the constituents of soils, and the manner of their formation, he goes on to describe the effects of constant culture, where no ameliorating means are used. Prof. L. says:

"The first colonists of Virginia found a country the soil of which was similar to that mentioned above; [rich in alkalies and humus,] harvests of wheat and tobacco were obtained for a century from one and the same field without the aid of manures, but now whole districts are converted into unfruitful pasture land, which, without manure, produces neither wheat nor tobacco. From every acre of this land there were removed in the space of 100 years 1,200 pounds of alkalies in leaves, grain, and straw; and it became unfruitful because it was deprived of every particle of alkali, which had been reduced to a soluble state, and because that which was rendered soluble again in the space of one year, was not sufficient to satisfy the demands of the plants. Almost all the cultivated land in Europe, is in this condition; fallow is the term applied to land left at rest for further disintegration. It is the greatest possible mistake to suppose that the temporary diminution of fertility in a soil is owing to a loss of humus; it is the mere consequence of the exhaustion of the alkalies."

This view receives a strong confirmation from the culture and crops on the lava soils around Vesuvius, and where after a cropping of more than a thousand years, without any manure being applied, grain crops are still produced with undiminished profusion. This decomposed lava, though containing little humus, is rich in alkalies, and this accounts for the prodigious fertility of the mass. Every farmer is aware that those parts of his fields where black muck, or nearly pure vegetable mold, is in the greatest abundance, usually if not always give the most inferior grain. The straw may be large, but it will want firmness, and the berry will be shrunken and imperfect. "The cause is this,—that the strength of the stalk is due to silicate of potash, and that the grain requires phosphate of magnesia, neither of which substances a soil of humus can afford, since it does not contain them; the plant may indeed become an herb, but will not perfect its fruit or seed."

It has been ascertained that 100 parts of wheat stalks yield 15.5 parts of ashes; the same quantity of barley stalks 8.54; and oats only 4.42 of ashes, which are all of the same composition. It would appear from these facts that upon the same field which will yield only one harvest of wheat, two crops of barley, and three of oats may be raised. There are some plants, such as the *leguminosæ*, (peas, beans, &c.,) and buckwheat, which are remarkable for the small quantity of alkalies they contain, and the first named plant, it is well-known, is successfully used in a rotation of crops, as one which may precede wheat advantageously.

Prof. Liebig is a strenuous advocate for a rotation of crops, and his reasons are based on the theory of *Decandolle*, which he considers as fully established:

"Decandolle supposes that the roots of plants imbibe soluble matter of every kind from the soil, and thus necessarily absorb a number of substances which are not adapted to the purposes of nutrition, and must subsequently be returned to the soil as excrements. Now, as excrements cannot be assimilated by the plant which rejected them, the more of these matters which the soil contains, the more unfertile must it be for plants of the same species. These excrementitious matters may, however, still be capable of assimilation by another kind of plants, which would thus remove them from the soil, and render it again fertile for the first. And if the plants last grown also expel substances from their roots, which can be appropriated as food by the former, they will improve the soil in two ways."

Macaire Princep established this latter fact, and proved that as some plants assimilate the rejected matter of others, a rotation of crops, founded on the facts so demonstrated, could not be otherwise than beneficial. On this subject, no well informed farmer has now any doubt, and the rotation of roots, grains and grasses has become part of every well arranged system. The experiments of these distinguished men have been verified by others, but for their history we must refer to Prof. Liebig's work itself. This excrementitious matter in time undergoes a change into a substance like humus, or which supplies its place, as a source of carbonic acid. The time to effect this change depends on the composition of the soil, and on its greater or less porosity. It is the quickest on a calcareous soil, for the power of organic excrements to attract oxygen and to purify, is alway increased by alkaline constituents; the change is slowest on heavy soils, such as wet loam, or clay.

No fact is better ascertained than that the fertility of a soil cannot remain unimpaired, unless those substances, of which it from time to time is deprived by cropping, are replaced, and this is effected by manure. It is on this point that Prof. Liebig's work is invaluble. The substances that in plants go to form food for animals, and form flesh by assimilation, are here traced to their original elements; and the substances which in the excrements of the cow and horse exert an influence on vegetation are pointed out, and the extent of that influence estimated. A careful analysis of manures proves there are other substances which will answer the same purpose as animal manures, of which one of the most prominent is ashes, lixiviated or otherwise, and which contain a large portion of phosphates.

"With every 100 pounds of the lixiviated ashes of the beech which we spread over a soil, we furnish as much phosphates as 460 pounds of fresh human excrements would yield. Again, according to the analysis of *De Saussure*, 100 parts of the ashes of the grain of wheat contain 32 parts of soluble, and 44·5 of insoluble phosphates, in all 76·5 parts. Now the ashes of wheat straw contain 11·5 per cent of the same salts; hence with every 100 pounds of the ashes of the beech, we supply a field with phosphoric acid sufficient for the production of 3,820 pounds of straw, the ashes being calculated at 4·3 per cent; or for 18-18,000 pounds of grain, the ashes of which amount, according to De Saussure, to 1·3 per cent."

Bone manure is still more powerful from this cause. The bones of animals are derived from the hay, straw, &c. which they take as food. Bones contain 55 per cent of the phosphates of lime and magnesia, and hay contains about as much of them as wheat straw, consequently eight pounds of bones contain as much phosphate of lime as 1,000 pounds of hay or wheat straw, and two pounds of it as much as 1,000 pounds of the grain of wheat or oats. The quantity of manure supplied to land with forty pounds of bone dust, is sufficient to furnish three crops of wheat, clover, potatoes, or turneps, with phosphates. Prof. Liebig's work on this point strikingly illustrates the effect which a small quantity of these salts will produce on a soil. It is a matter of indifference in what form the substances taken from a soil are restored to it, whether in excrements, ashes or bones, the effect is much the same. Prof. Liebig, indeed, says:

"A time will come when fields will be manured with a solution of glass, (silicate of potash,) with the ashes of burnt straw, and with salts of phosphoric acid, prepared in chemical manufactories, exactly as at present medicines are given for fever and goitre."

Prof. Liebig shows that excrements, or dung, have a very variable and relative value. Their power is mainly owing to the nitrogen or ammonincal salts they produce or contain, and in common dung this quantity is very minute. The nitrogen contained in the fæces of man is greater than in that of animals, but is by no means constant. In that of the inhabitants of towns the amount is greater of this constituent, than in that of those in the country; as in cities more animal matter is used. "The fæces of those who live principally on bread and potatoes are similar in composition and properties to those of animals."

The manure from cattle and horses are most valuable on soils consisting of lime and sand, as such are usually deficient in silicates and phosphates; while their effect is less on soils that are argillaceous or granitic, as these usually contain all the potash that is necessary, or at least a considerable quantity. In such soils, human excrements increase the fertility in a remarkable degree, and it is here that poudrette exercises an almost magical influence. The urine of man and animals contains in its nitrogen a source of the greatest fertility, as from it ammoniacal salts are formed in abundance. The active properties of urine exist in its urea, tree lactic acid, and lactate of ammonia. When urine putrefies, or becomes available to vegetation, the urea is converted into lactate of ammonia, or volatile carbonate of ammonia, one of the most powerful of the fertilizing agents.

The great obstacle in the use of urine as a fertilizer has arisen from the escape of the ammonia, but according to Prof. Liebig, it may be fixed and retained for the use of plants without difficulty.

"If a field be strewed with gypsum and then with putrified urine, or the drainings of dung-hills, all the carbonate of ammonia will be converted into the sulphate, which will remain in the soil. But there are still simpler means of effecting this purpose; gypsum, chloride of calcium, sulphuric or muriatic acid, and superphosphate of lime, are all substances of very low price, and completely neutralize the urine, converting its ammonia into salts, which possess no volatility. * * * If we strew the floors of our stables with gypsum from time to time, they will lose all their offensive smell, and none of the ammonia which forms can be lost, but will be retained in a condition serviceable as manure."

Pastures act a most important part in returning to the soil a supply of nitrogen in place of that taken away in

the hay and grain. In large farms, where each field in rotation is in grazing, the nitrogen is completely replaced, and where the manures made on a farm are carefully returned to the soil, the quantity of this important ingredient must increase every year. When the night soil of cities shall be generally converted into poudrette, as it now is in some places, no nitrogen of consequence will be lost, as the quantities used in the shape of corn and cattle will be returned to the country and made available for new crops and the feeding of new animals. The following extract will show the loss farmers sustain from not attending to these powerful manures:

"When it is considered that with every pound of ammonia which evaporates, a loss of 60 pounds of corn (grain) is sustained, and that with every pound of urine a pound of wheat might be produced, the indifference with which these liquid excrements are regarded is quite incomprehensible. In most places only the solid excrements, impregnated with the liquid, are used, and the dung-hills containing them are protected neither from evaporation or from the rain. The solid excrements contain the insoluble, the liquid all the soluble phosphates, and the latter contain likewise all the potash which existed as organic salts in the plants consumed by the animals."

Prof. Liebig's work is divided into two parts, the first of which we have now briefly noticed. Some of his principal points of difference from the other writers that have preceded him, or rather those things in which he has advanced beyond them, may be seen in the extracts we have made; but the vast mass of facts he has collected, and the numerous experiments he has conducted and recorded, can only be learned by a reference to the work itself. The second part of the volume is devoted to a description of the chemical changes of organic compounds, and is, as well as the appendix to the first part, rich in facts illustrative of his opinions and his views of the nutrition of plants, and the promotion of vegetation.

The principal things in which Prof. Liebig may claim originality in his system, and they are those which lie at the basis of all agriculture, are the use attributed by him to humus, or rather the divesting this substance of the paramount importance that has been assigned it in vegetation, and the discovery of the manner in which nitrogen or ammonia is furnished to plants, and the consequent explanation of many of those things which have hitherto been so mysterious and inexplicable. His reasons for the rotation of crops, and his arguments to prove the necessity and propriety of such a course of culture, as well as those which refer to the value and application of manures, are such as will be appreciated by the farmer who has paid attention to the operations of nature around him.

It is to be presumed that some of the positions taken by Prof. Liebig may require some modification; and on some points he may prove not perfectly correct, but for the manner in which he has taught us how the principal operations of vegetation are performed—and the understanding this constitutes the whole philosophy of agriculture—the farming public are very greatly indebted, and we cannot question its influence will be widely felt. In conclusion we remark that we recommend Prof. Liebig's volume most cordially to the reader, and as an American edition, with notes by a distinguished writer, is in the press, we trust that the views of the learned German may be put to a practical test, by the intelligent agriculturists of our country.

WORK FOR THE MONTH.

Corn.

The agricultural census of the United States proves, as we had anticipated, that Indian corn is our great bread crop, it reaching the amount of 318,000,000 of bushels; and the crop of the year 1839 was at least 20 per cent less than that of 1840. May is the month for preparing the ground and planting this crop; and from the 1st to the 15th, may be considered the proper time for planting. The ground must be rich, mellow and free from all unnecessary moisture. If inclining to clay, or to be heavy when plowed wet, the greatest care should be used not to have the earth moved while in that state. If you have but a small quantity of manure, you may use it in the hill; but it is better to apply enough to ensure the rapid growth of the crop, and spread it equally over the ground. Too deep plowing between the rows is not advisable, after the roots have begun to spread; but a frequent stirring of the surface will be found very useful. There are almost numberless varieties of Indian corn, known by local appellations, or marked by some difference in color, &c. Of these, the Dutton, Brown, Canadian, Red Blaze, are the most celebrated at the north, while some of the varieties of the gourd seed are usually depended on for the great crop of the south and west. The distance in planting the rows, depends on the size of the corn, richness of the soil, &c.; and the number of stalks in a hill must be governed by the same rules. The greatest quantity can be grown in drills, but corn can be cultivated easier by planting so that the cultivator can be run both ways between the rows.

Potatoes.

Potatoes may be planted from the time the ground becomes dry until June; but the late crops will not ripen as well as the earlier ones, or produce as good table potatoes. A moist soil, with abundance of vegetable mold, is the best for potatoes. If the ground is inclining to be wet, they may be planted on ridges; if to be dry, this root will do the best in furrows. For the table, the Pink Eye, Mercer and Foxite are highly esteemed; for field culture, or for animals, the Sardinia, Long Red, Merino and the Rohan, are most valued. The Rohan requires the whole season to mature, but is very productive and easily gathered.

Animals.

More animals die in the months of April and May, than in any or perhaps all the other months of the year. It is a sign that a man has little corn for his pigs, no clover, hay or turneps for his sheep, no carrots or oil cake, or ship stuff for his cows, or cob meal and cut straw, oats and cut hay for his horses, when the crows begin to collect for their carrion feast in the fields, and the fences and apple-trees are decorated with dead lambs, sucking pigs, &c. &c. Don't let your animals into your fields too early; and not into your meadows at all, unless you wish to have the roots of the grasses spoiled by treading, or killed by close grazing. Men rarely lose any thing by extra attention to their animals at this trying season of the year; and attention to their wants now, is always amply repaid at a later period.

Manures.

The cardinal point to be observed in the management of manures, is to apply them in that state, and to those crops which are the most benefited by their application. When manures are left in the yards over the summer, and exposed to the action of sun and rain, they are deprived of much of their value. The most efficient parts pass away and are lost to the farm. If manures are not applied to the spring crops of corn and roots, they should be heaped with layers of earth, vegetable mold, marsh mud, wash of roads and with some lime, that the salts and gases produced, may be absorbed and retained. In this way, the value of yard manures is much increased, and the quantity augmented. The experiments of Chaptal and Liebig, prove that the mere vegetable mold left by the decomposition of plants or manure in the open air, possesses little value compared with that in which all the salts and fertilizing ingredients are retained.

A short time since, a committee of the French Institute was appointed to examine the nature and effects of a new manure, represented as of extraordinary power. It was found to be composed of Gypsum, saturated with urine, the mass then dried and pulverized, and applied to plants in the form of a powder. It was pronounced the most effective of a large variety of the animalized manures, so much so indeed that the committee recommended great caution in its use. A small quantity applied to corn, garden plants, &c. gave a most rapid and vigorous growth. Would it not be well for our farmers to make some experiments with this material? It is certainly within the power of all. We hope that poudrette and bone manure will also be fairly tried; on these points we should be negligent no longer.

Fruit Trees.

May is the time to examine your fruit trees particularly. Look at your plumbs and cherries, and if you can detect the black excrescences upon them which are so common, and which threaten to destroy these delicious fruits, see that every infected branch is eradicated without ceremony. This course has been successful in some nurseries and orchards, and will doubtless be in others, if thoroughly adopted. There are some apple trees in almost every orchard that are shy bearers, and while thrifty and vigorous, will not produce a bushel of fruit in a dozen years. Let such trees be marked for grafting. Trees may be transplanted this month, if proper care is used to remove a sufficient quantity of earth with their roots. Do not put your trees into narrow deep holes, dug in a hard soil, but let the holes be large and shallow rather than otherwise, and be careful that the tree in setting out is not covered but a very little higher with earth than as it naturally stood. Neglect of this point, not unfrequently inflicts serious injuries on trees, and prevents their thrift or productiveness.

New Things.

Do not run crazy after new things. There is a great deal of charlatanry in the world; and cattle and sheep, and swine, and new plants, or new varieties, are as capable of being outrageously puffed, as Brandreth's Pills, or Rowland's Kaylidor. Many valuable plants and animals have of late been brought to the notice of the public, and farmers are much indebted to the public spirited men who have been at such pains and expense in importing or improving them. While therefore the farmer should encourage every properly conducted effort to improve the character of our animals, and increase the quantity and quality of our productions, he should examine every claim to improvement carefully, and frown down every attempt at imposition or fraud. Many failures occur in seeds and plants in one part of the country, when the same would succeed well in another. Such are not adapted to the particular soil and climate, and the blame must fall on the want of judgment in undertaking the culture.

The Team.

It is enough to sicken the heart of a man of ordinary feeling, to witness the wretched skeleton animals that are compelled, by dint of flagellation, to perform the labor of the farm, in so many instances. Such treatment of animals is not only cruel but unprofitable. It is certain that one team well kept, will do more work than two half starved ones, and do it at the time and in the manner it should be done. It is a most injudicious practice to allow working cattle or horses to leave their stalls for the pasture, until the spring work is mainly over. They cannot derive sufficient nutriment from the young grasses, and a taste of the new, makes them eat sparingly of the old, and the result is, they will fall away rapidly

Plaster.

May, in our latitudes, is the best month for sowing gypsum, and it should be improved fully. The use of it on corn, peas, potatoes, and particularly on clover, will amply repay the expense of procuring and sowing. The quantity per acre should be from one to two bushels; although a greater quantity can do no injury. Do not fear reducing your lands by the use of plaster; that was one of the errors of ignorance, and ought not to find any countenance among well informed men. It cannot be too often repeated, that plaster and clover are the grand means of enriching and fertilizing land.

Caterpillars.

Examine your fruit trees and orchards carefully this month, as you will be able to detect the appearance of worms, or webs, more readily now than at a later time, and when attacked early, an orchard may be soon cleared of the caterpillar. A long slender rod with a swab of tow or cloth around the end, will at this time wind up both web and worms, if applied in the morning when the insects are in their nests, and no injurious applications to the trees, such as are sometimes recommended, will be necessary.

Pruning.

It is the custom among farmers to do the pruning of their orchards at such times as is most convenient, or as they have been taught to do, without reference to vegetable physiology, or the best methods pointed out by nature. Some prune in the winter, many in this month, and perhaps May is as good a time as any, the summer months excepted. We think that July, or rather the interval that takes place between the formation of the flower and fruit shoots or buds, and that of the terminal shoots or buds, a period that lasts some three weeks, is the best time for pruning, and we advise those of our friends who have this work to do, to ascertain by experiment, what time gives the most healthy and vigorous wood for covering the wounds necessarily made in pruning.

Harrowing Meadows.

Meadows, where they have not been subjected to an occasional plowing and cropping, are apt to become exhausted of good grasses, the ground close and hard, and the roots mossy. A dressing of ashes or plaster will do much good, but a thorough harrowing with a fine toothed harrow, will materially aid such dressing and give a sweeter, better herbage. Previous to the harrowing, grass seeds of the best kind should be sown, which will be covered by the process, and a new healthy crop will be the result. The experiments of Liebig, in ascertaining the effects or necessity of alkalies in the formation of grasses are interesting, and show conclusively the loss those sustain who sell their ashes, or allow their leached ones to remain without use, when their fields would by them be so much benefited.

The Garden.

There is very much work to be done in the garden the present month. All the vegetables we intend to cultivate, the seeds of which are not already in the ground, must be put in as fast as the soil is warm enough for their reception. There is little use in planting when the ground is cold and wet; the plants will be more vigorous and arrive at maturity in favorable states of planting, if the putting into the earth is delayed a week or fortnight, as soon as they would if put in, when the soil was unfit as much earlier. Let the ground be rich, loose, dry, and warm, and there is little to fear for the garden.

Corn for the table, must have a place in every kitchen garden, and if planted in drills and properly managed, a few rows of the early, the common, and the sweet varieties, will furnish a supply for a long while. It must be planted as soon as the danger of frost is passed, as it has no enemy to fear but cold.

Melons and cucumbers are cultivated in hills, the first five or six, and the last four feet apart. Bridgman directs to have a rich piece of ground worked the first week in May, mark it into squares of the distance intended for the hills, at every angle of the square dig a hole twelve inches deep and eighteen over, into which put six inches deep of good rotten dung; put on this four inches of good earth and mix well with the spade; draw more earth over the mixture and form a circular hill a foot broad. Of cucumbers, plant four or five seeds half an inch deep, and of melons six or seven at the same depth. We prefer putting more seeds in a hill, and after the plants are well up, selecting the best placed and most vigorous for the crop. The yellow bug is the worst enemy the cucumber and melon is obliged to encounter, and a crop of these plants as well as squashes, will be frequently destroyed in a few hours. Constant attention at such times is required; but we have found a hen with a good brood of chickens, enclosed in a coop and placed in the garden, one of the best preventives for these and similar depredators.

Beans, both the bush and the pole beans, require a

rich light soil, and may be planted either in hills or in drills. Pole beans are best in hills, four or five beans in a hill, and the pole placed in the centre with the aid of an iron bar. Beans are very tender and cannot be planted with safety early, as the crop in that case is very liable to be destroyed. The White Lima, Dutch case knife, and White Cranberry, are the most esteemed pole beans; and the White Cranberry Dwarf, White Kidney Dwarf, Refugee or Thousand to one, and Early Six Weeks, among the best bush beans.

Squashes should be planted in hills as directed for melons or cucumbers, and should find a place in every kitchen garden. The early Bush Squash, Vegetable Marrow, Cocoanut and Crookneck are the kinds most generally cultivated. The Summer Squash may be planted some four feet apart, the running kinds from six to nine, as is required by the length of vine. As in the case of the melon and cucumber, several seeds should be put in each, of which all but three or four may be pulled up.

The Strawberry should have a place in every garden, as the fruit is not more delicious than conducive to health. A soil of strong rich loam, rather moist than dry, is best for this berry, as the mass of foliage and flowers from each root requires a plentiful supply of water. May is a very good month for making strawberry beds, and if the transplanting is well done, and the plants watered as required, many of the roots will produce fruit the same season, and give an abundant supply the next. The culture of the strawberry in rows gives the best fruit, and frequent renewal is advantageous. The principal care in growing the strawberry, is to clear the plants of the runners, for these, if suffered to remain, soon give such a mass of vegetation, that but little fruit, and that of an inferior quality, can only be expected. The Methven Scarlet, Pine or Mulberry, Downton, and Keen's Seedling, are choice varieties, but new kinds are almost yearly announced, some of which have proved of great excellence.

May is a good month for transplanting cabbages from their seed beds to the place where they are to stand. A moist cloudy day is to be chosen for transplanting, but if the roots are good, and the soil in good condition, few failures will occur in any state of the weather. Cabbages are frequently planted too close to mature their heads; and if set out too early, those intended for fall and winter use, will have a kind of second growth from the head, cracking it open and rendering it unfit for use.

The Tomato has within a few years acquired much celebrity as a garden vegetable, and to most palates it is as delicious, as it certainly is conducive to health. The Tomato is a tender plant, and should be started in a forcing frame, but if planted as early as the season will admit in a warm border, or in rich warm soil in the garden, they will generally reach maturity. Those who have not hitherto cultivated this plant, will do well to introduce it into their gardens.

Spinach is an excellent garden plant, particularly the New-Zealand variety, and may be sown early. This plant is apt to degenerate, and instead of giving large perfect leaves, as it will when of good quality, only run up to seed, and be of little value.

The Beet is generally cultivated and well deserves to be, but it should be sown at different times, and varieties of the late and early kinds should be carefully selected. If the beet intended for winter use is sown early, it frequently attains its maturity, undergoes a change that unfits it for eating; it is found to contain more potash than sugar, and throws up a seed stem that renders the root fibrous and worthless. The white Siberian or sugar beet is an excellent variety if not grown in too rich ground: but for general use, and on all soils perhaps the blood beet or scarcity should have the preference.

The first sowings of beets, carrots, parsneps, &c. are large enough this month to require thinning, and the earth should be stirred around them to aid their growth. Much is depending on the attention these plants, with onions, lettuces, and indeed garden vegetables generally, receive when young. The earth must not become crusty or hard, but kept friable, as on this its aeration depends.

May is not unfrequently a trying month for young plants, on account of drouth, and if this occurs they must receive proper watering, or they will be severely checked if not destroyed. The cucumber and melon are apt to suffer from this cause, as they have only one set of roots, while the squash, &c. throw down roots at little distances from their vines and derive more abundant supplies of moisture.

Transmutation.

The materials seem to be rapidly accumulating for a new chapter in the "Progress of Error," so far as regards the subject of transmutation. The belief is an old one that rye is at times transmuted into chess, and the same opinion has been at different times entertained of wheat and oats; and is still, so far as wheat is concerned, by many. Within the past year, several new discoveries have been made in transmutation, and several plants have been added to the catalogue, as undergoing such conversion. The Maine Cultivator, (a very good paper by the way,) has been the medium through which most of the late discoveries have been made known; for instance the case in which a distinguished physician of Maine states as a fact within his own knowledge, in which a field of barley, partly eaten off by cattle, in all such places *turned to oats*'—that in which Mr. Smiley, from the excrescences or buds on the stalk of the annual summer flower, the Gilliflower, grew a large quantity of *first rate potatoes*; and those in which Dr. Parker of Billerica produced from the seeds of the water Arum or *Calla palustris* of botanists, the *true tiger lilly*, and from the seeds of the Peony, *true yellow lillies*. (See the Maine Cultivator of Dec. 5, 1840.)

But the honor of heralding all the new transformations cannot be claimed by Americans. We learn from the Q. J. of Agriculture, that some farmers in Forfarshire in Scotland, have converted smut balls from wheat into chess; and the following from the "Comptes Reuder" of August 1839, shows that the French have not been laggards in the matter.

"Some botanists have thought in consequence of the extreme resemblance of the fruit of the Ægilops to the grains of cultivated wheat, that the latter was only an Ægilops modified by cultivation. M. Auguste de St. Hiliare says, "from a letter from M. Frederic de Girard of Montpelier, that M. Esprit Fabre having found in the environs of Adge, some plants of the *Ægilops triticoides*, had sown the seeds of them in his garden, and had obtained a plant in which the characters of the *Ægilops* had almost disappeared to make way for those of a *triticum*, or wheat. It is not yet altogether a *triticum*, but it is no more an *Ægilops*. M. Fabre proposes to sow next year, some grains collected this year, (1839,) and to continue the observation he has begun."

In the transmutation of grain thus far, the progress has always been backward, or from good to that which is worse; M. Fabre seems to us to be nearer the right track, and we hope if any more discoveries are to be announced in the transmutation of plants, they will be of the Fabre kind, or the change be from bad to good.

Correspondence, Inquiries, &c.

Plaster on Wheat.

A "Subscriber" in Gorham, Ontario Co. asks the following questions:—"Does or does not plaster when sowed with clover seed upon wheat in the spring, have a tendency to make the crop (wheat) *rust*, thereby causing the destruction of the grain, according to the severity of the rust? If so, what plan is best to adopt, instead of plaster so as to give as rapid a growth to the clover ley, to render it fit for plastering after harvest?"

We very much question whether plaster ever produces on wheat the effect supposed by our correspondent. In an experience of 20 years, we have never known an instance unquestionably traceable to this cause, of rust in wheat. Rust will sometimes attack plastered wheat, and so it will in such seasons that which has not been plastered. A neighbor of ours whose crop annually is from 8 to 12 hundred bushels of wheat, has always plastered his wheat, and has never perceived any such injurious results. For keeping up the fertility of his wheat lands, he relies on plaster and clover altogether, and an increasing productiveness after a trial of 25 years, shows he has not miscalculated the efficiency of this mode.

If plaster operates in producing rust at all, it must be by giving too rapid a growth; and there is reason to believe, that any fertilizing substance which would give the growth of clover that plaster does, would also still more injuriously affect the wheat crop. The concentrated animal manures such as Poudrette, or Urate, if applied in large quantities directly to the wheat crop, is found to give too much straw, and an inferior grain: of course we know of no manure that would give the same growth to the clover, that would not be far more likely to injure the wheat than plaster.

The subject mentioned by "Subscriber," is, however, a very important one, and we should be pleased to hear the opinions of some of our experienced correspondents, who have so extensively practiced sowing plaster and clover with their wheat

Corn Culture.

Our correspondent "L." of Maryland, in controverting the opinion of Judge Buel, that deep plowing corn in the after culture of the plant was injurious, transmits the following quotation from Cobbett. "But why need this be said in an Indian corn country, when it is well known, that without being *plowed* between the rows, the corn will produce next to nothing. It may appear, that, to dig thus among growing plants, is to cut or tear off their roots, of which the ground is full. This is really the case, and this does great good, for the roots thus cut asunder, shoot again from the plant side, find new food, and send instantly fresh vigor to the plant. The effect of this tillage is surprising. We are hardly aware of its power in producing vegetation; and we are still less aware of the distance to which the roots of plants extend in every direction."

We were aware of this opinion of Cobbett's, but have been inclined to attribute the good effect of tillage on corn, not to the tearing of the roots, or the mutilation of the plant, but to the aeration or exposure to the atmosphere, which frequent stirring of the soil produces, and which has the best effect on plants. One of the largest crops of corn ever raised in the United States, was grown last year by Mr. Williams of Bourbon, Co. Ky. and the culture was from the beginning intended to bear on this question, the surface only being moved in the shallowest manner, and no plow used to disturb the roots. The crop was 158 bushels to the acre. Let the ground on which corn is planted be light and friable, rich, and plowed in the first place so that the roots can penetrate without difficulty, and we think there is no benefit in tearing the roots by deep plowing. The cultivator will loosen the earth, and pulverize it better than the plow, and does not touch the roots.

The error of not working corn in a drouth for fear of 'firing' it, is not as common at the north now as it formerly was. The man who lets his weeds stand, to shade his crops and save them from drouth, and he who refuses to stir the surface at such time for the same reason, acts on principles equally and alike unsound and unphilosophical.

Tobacco—Imposts.

We have received two communications from "Agricola," and "Subscriber," on the paper inserted in our March number, respecting the Tobacco trade of this country. We are not disposed to differ with Subscriber as to the worthlessness of the weed in itself, and religiously eschew it in all its forms; so we do not consider ourselves called upon to controvert his positions, and shall rejoice if the reform of which he speaks shall be as complete as he seems to anticipate.

"Agricola" is strenuously anti-tariff, and for that reason we should like to give his paper a place in the Cultivator; but our journal was not established for such discussions, and the file of communications before us on agricultural topics, forcibly reminds us that other subjects than political economy, require all our space. One word only to our friend. The treasury of the nation must be replenished by direct taxation, or by impost duties. We prefer the latter; as we are confident a majority of the people of this country do; and we are anxious that the scale should be so graduated as to do equal and exact justice to all foreign nations as far as is possible. The articles this country cannot produce, but which are of prime necessity to the mass of the people, should feel duties the lightest; articles of luxury, things required by the rich and the affluent, and not required or accessible to the many, should feel them the heaviest.

Management of Bees.

We have received from Mr. Quimby, of Coxsackie, an article on the management of Bees, from which we make the following extracts:—"In the January number of the present volume, an inquirer asks if there is any way of preventing more than one hive swarming at a time? My experience would lead me to answer there is. It is only the first swarm from a hive that should be kept separate. These seldom or never leave the hive without first appearing outside the entrance in great numbers, apparently in a tumult, a few minutes previous to swarming. The apiarian, if he is observant, will soon learn when to expect a swarm. When one has started, and there are indications of another before the first is hived, they should be well sprinkled with water from a watering pot, or some other way. They will immediately re-enter the hive to avoid the supposed shower. In about thirty minutes they will try it again, which will give time to secure the first. If they should be disposed still to unite with the first, throw a sheet over the hive to keep them out."

Mr. Quimby adds the following query, which we hope some experienced apiarian will answer through our columns, as others have suffered loss from the same cause:—"I have had several hives in which the young brood appeared fatally diseased. The breeding cells were nearly filled with the young bees in the grub state, stretched at full length in the cells, dead and putrified; the cells are sealed. In this unhealthy state, so few are hatched, that the numbers rapidly decrease, and are soon gone; unless transferred to another hive by driving them out, the only remedy I have yet found. In this I have been successful when done in season, in rearing a healthy swarm, yet the loss is considerable, as they do not swarm that year. Large and small hives are equally affected. I wish to learn the cause of this fatality, and the means of preventing it."

South Downs and Leicesters in Ohio.

Mr. L. Barker, of Monroe, Knox County, Ohio, gives a favorable account of the progress of agriculture in that part of the State, and says "he can show as good Leicesters and South Downs as ever came from England; and as fine Berkshires as any of the New-Yorkers are able to do." When farmers begin to prefer and keep the best animals, it is a sign they are beginning to understand and attend to their true interests.

Feeding Milch Cows.

In reply to an inquiry in the Cultivator as to the *best* and *cheapest* manner of feeding milch cows, Mr. J. A. Grimes, of Harrodsburgh, Kentucky, gives the following method as practiced by him. We would add, there are few substances more nourishing than corn fodder, and the large stalks, that are usually lost, if treated in the way recommended by Mr. G., make the best food for cattle or horses:—"We procure in the fall, all the corn shucks we can, as the farmers put little value upon them. When we commence feeding, we have a large kettle in which we can heat water, and a basket holding the quantity we intend for each animal. We then take the shucks to a common cutting box, and cut them as you would hay or oats, and scald them a few minutes in the kettle. Then take them out and sprinkle three quarts of meal to the bushel of cut shucks, and you will have a better feed than three gallons of corn or meal, fix it as you will. When I was last in Mississippi, the

corn crop was very short, and I suggested this way of feeding to some of my friends, for feeding mules and horses as well as their milch cows, and before I left, was told the cows had improved very much in the quality as well as the quantity of their milk."

Mr. G. is a most successful breeder of Berkshires, and has sold great numbers of the pure breed, as well as crosses with the Irish and Bedford. Mr. Grimes' stock is represented as one of the first quality, of which there can be little doubt, it having been derived from the best sources.

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Inquiries—Apple and Peach Orchard.

A correspondent in Ulster County says:—"I have some 50 or 60 fine thrifty apple trees, but they do not bear; what process must I use to improve them? I observe something which looks like lice upon them; if so what will kill them? I should be glad to set out a peach orchard in the spring. What situation is best for it?"

If apple-trees that are thrifty are not inclined to bear, grafting will prove a certain remedy. Pruning is also sometimes useful. Some trees will blossom abundantly and yet bear no fruit; some experiments would seem to show that in such cases sprinkling the blossoms with plaster has a good effect. Lice on the tree may be removed by whitewashing, or by washing with lye. The peach requires a warm free soil, and a southern exposure. This tree cannot endure a heavy soil, saturated with water; and if it struggles through a brief existence in such a position, the fruit will be limited in quantity and of inferior quality.

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A Tennessean.

A friend of ours in Tennessee, after expressing a wish to make some improvements in his agriculture, and ordering a set of the Cultivator from the beginning, adds, "I assure you, however, I never expect to begin to raise 137 bushels of corn to the acre, or make a yearling hog weigh 300 lbs. If I do I must have but one acre, and but one hog."

We can assure our friend, that although such crops of corn as those he alludes to, are rare at the north; yet multitudes of hogs from 10 to 12 months old are made to weigh 300 lbs., by our pork growers; indeed nothing is more common; and if he will discard the landpikes of which he speaks, and substitute some of the improved breeds, we have not a doubt he will do the same. If our friends in the south west will seed their lands with good grasses, where its growth is practicable, keep more cattle, sheep and swine, adopt a rotation of crops, and depend more on these than on cotton, we think they would be essentially gainers by the exchange.

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Indian Corn.

We have received from Dr. Goodsell of Utica, an account of some experiments and trials instituted by him in 1839, to determine the kind of corn best adapted to the latitude of Utica. After examining a great number of kinds, he selected for planting the Tree corn, the Dutton, the Canada White, the White corn, the Massachusetts corn, (yellow,) and the Toronto, or ninety days corn, also yellow. These six varieties were planted in the same field, and at the same time.

The Tree corn did not ripen; the Dutton was objectionable on account of the size of the cob, which, not drying through, gave a moldy effect to the kernel near the but of the ear; the Canada White ripened well, and is a good variety; the White corn gave a good growth but was too late; the Massachusetts ripened well, but the kernel is not deep and cannot give as much value as the White flint; the Toronto gave the best ears, was the best filled out; and in 1840, Dr. Goodsell directed none to be planted but the Toronto. As a proof of the rapidity with which this corn comes forward, the Dr. states that on the first day of July he planted some of this corn in his garden, and before the middle of September, ears were picked for boiling, and early in October, it was cut up and housed. We have the pleasure of acknowledging the receipt of several ears of this variety; and we understand that Dr. Goodsell could spare a few bushels for seed.

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Suggestions about Pigs.

A subscriber who signs himself "*Cheshire*," from Carroll County, Indiana, has made some important suggestions as to the propriety of not losing sight, in the discussions about pigs, and the efforts made to improve the breeds, of the admitted valuable breeds existing in the country, other than Berkshires. We think this point one that should be attended to; and having no personal interest in any of the breeds ourselves, we are anxious that the interests of the great body of the farmers only should be consulted in the pages of the Cultivator; and though fully convinced of the excellence of the Berkshires, we shall be gratified in presenting the claims of any of the varieties or breeds named by our correspondent, if brought forward in the manner suggested in the extract. If any of our friends who have the breeds alluded to, will furnish us with the descriptions, and information desired, with correct delineations, we shall take pleasure in presenting them to our readers.

"We in the west need an improved breed of hogs, but we want, (at least such is the impression of many,) a larger and handsomer hog, at least so far as color is concerned, than the Berkshire, to bear witness to the richness of our soil, and the exuberance of our crops. You would both entertain and instruct a great many of your western readers by giving in your paper, historical sketches of the Bedford, Cheshire, Woburn, Russia, and Byfield hog, their distinctive color, shape, time of maturity, average size, and where the breeds in purity could be purchased, with prices, &c., accompanied with illustrations or portraits, that speak far more effectually than pages of description. In this way farmers will be enabled to judge for themselves, as to what breed of hogs is best adapted to their situation and their means."

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Profitable Sow.

The following is an extract from a letter written by Mr. J. Reed, of Butler County, Ohio. "As your subscribers are sending you the weight of calves, pigs, and other animals, I will venture to send to you the amount of sales, or the value of the litters of a single sow in my possession. She had the first litter the 6th of July, 1837; and in all has had seven. From these seven litters I have sold $1,206 of pigs, and have reserved for myself three choice sows, for which I have been offered $50 each, making in all, $1,356. The sow was sent from Albany by C. N. Bement to Mr. Beach. She is five years old this spring, and will weigh about 500 lbs."

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Inquiry—Manure.

I have frequently observed on reading the Cultivator, that you eastern folks estimate manure by the "*cord*." Please to say in a paragraph, what constitutes a *cord of manure*. *Mauch Chunck, Pa.* L. Lippincott.

The term "*cord*" has been adopted by many farmers to express a given quantity of manure, as more definite than "*load*." This latter word is applied to the quantity carried by a horse cart, wagon, or ox cart, and necessarily expresses a variable quantity; which is not the case with "cord." A cart or wagon body with side boards, will carry not far from a cord of manure. A "load," in ordinary cases cannot be considered more than half a cord.

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"Hamilton's Patent Pit Saw & Slitting Machine."

W. Williamson, Esq., of "Junction, Va.," requests some information as to the value of this invention, and the probability of its success. We will thank any who are acquainted with the subject, for the information desired, as we think, if its performance is as represented, it must be valuable in many parts of the United States.

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Charlock, or Wild Mustard.

"A. H. N." of Skaneateles, requests information as to the best mode of separating the seeds of this plant from the false and broken grains remaining after threshing. If fed out to fowls with the grits, they propagate rapidly, and even spread over a farm. If it cannot be separated, no farmer should use it, until it is boiled or ground, to destroy the vitality of the seeds. "A. H. N." says, "a gill of these seeds put in a barrel of new cider, will keep it a long time from turning sour."

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Mustard Seed.

Messrs. French and Davis of this city, mustard manufacturers, inform us that they will pay $3 per bushel for clean English or American mustard seed. The brown American, or yellow English only should be cultivated. The seed of the wild mustard or charlock, is sometimes brought to market, but it is worthless. Would not the cultivation of the mustard as a field crop be profitable? Has it been attempted in this country, and with what success? Will some of our friends reply?

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Inquiry—Pumps.

R. P. Dodge, Esq. of Georgetown, has requested to know whether the pump called the Troy pump, and noticed in the former volumes of the Cultivator, will draw from deep wells, or such as are from 45 to 60 feet in depth. If Mr. Dodge will turn to the article alluded to by him, (Cult. vol. 7, page 19,) he will find the following from the agent, H. Warren, Esq. of Troy. "One man will pump quite comfortably, with one of these, forty feet deep, and I do not care selling them *longer* than that; although I have sold them 75 feet long; but such pumps go too hard to suit me, especially to send off." Mr. D. will find his inquiries as to prices, &c., answered at the same place.

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Working Cattle.

Cattle are among the most valuable animals we possess for farm labor; and though in our wheat growing districts where extensive summer fallowing is required, horses are of necessity preferred; yet on a great majority of farms in our country we have no doubt cattle would be found preferable. All who have worked the ox are aware that much of his ability to labor, and the ease of draft is depending on the yoke; and it seems probable that a decided improvement might be made even in this respect by adopting the mode of yoking cattle practiced by the Dutch and Spaniards, and in which the animals draw by a strap passing across their foreheads as represented in the cut given below.

[Ox Gearing—Fig. 46.]

Our attention has been drawn to the subject by some notices which have appeared in the European Journals in favor of this mode of harnessing cattle, and by the following communication on the subject from our respected correspondent, Wm. Bache, Esq., Wellsboro, Pa. Speaking of the Dutch mode of working oxen, he says:—"Thirty years ago, I spent some time in Havanna, and was much surprised at the novelty, as it was to me, of seeing oxen haul by the forehead. Oxen were used entirely in drawing the cargoes to and from the shipping, and I was soon convinced of the superiority of this mode over our own. I will not take upon me at this distance of time, to state the number of barrels of flour, or boxes of sugar they would haul on carts or drays of the most clumsy and unwieldy make; but I felt satisfied I had never seen such loads drawn by one yoke of cattle in the United States. As the streets of Havanna are very narrow, it is necessary that cattle should be under the nicest management and control. A light rope is passed through the cartilage or gristle of the nose of each ox, which the Spanish carter, (who always rides on his cart) either carries in his hands, or hangs on one of the stakes of his vehicle, and in case a team should become restive or attempt to runaway, a slight pull at the rope brings them instantly under command. I think their method of propelling them forward is better than ours. I never saw a Spaniard belabor an ox with a heavy stick as if he was striking on a wool sack, but he carries a small goad fixed in the end of a long stick or rod, the slightest application of which is found to possess a much more stimulating power than any quantity of blows from a heavier weapon."

E. H. Barnaby, Esq. of Brookfield, N. S., in a communication to the Cultivator, says—"For some years past, I have been in the habit of using oxen more or less, yoked both in the English yoke with bows, and in the Dutch mode with straps, and now find the Dutch mode to be the best. This way of yoking, has the decided advantage over the English yoke; cattle yoked in this way will haul more, and they will back nearly as much as they will haul, and will travel with greater ease." See page 19 of the Cultivator, vol. 7th.

We can see no good reason why such yokes as here recommended, might not be substituted for the common yoke in working cattle here; at least a trial might be made, and their comparative merits fairly tested. Innovations on long established usages might be expected to make slow progress, but if they are not only innovations but improvements, they may be expected to succeed in establishing themselves. Let the Dutch yokes be tried.

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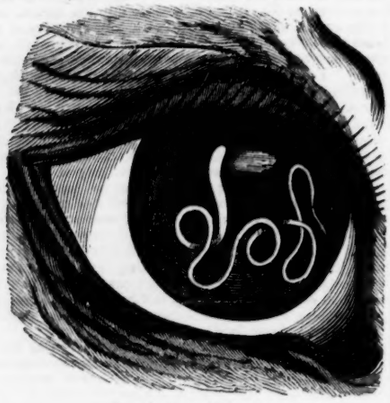
English Berkshires and Bacon.

Wm. Bache, Esq. of Pa., in a paper on the subjects here named, says:—"I think a great deal that has been said or written on the subject of Berkshires, may without any censoriousness be called Hog pedantry and Breeding Quackery. I have known the hog called the Berkshire from my boyhood, and that you may place back at least half a century, and my recollection of them answers precisely to the description, (as pictured and written) of the Berkshires of the present day, except that he never attained any thing like the weight he is now said to reach. They were not the 'Farmer's hog' to make bacon of; they were the hog of small families, such as kept a pig and lived much as the Irish now do, and were much valued for their quiet habits, and the facility with which they took on flesh at an early age. They were much esteemed for making pickled pork, that is pork scalded, not singed in dressing, and preserved in brine as is now done. They were generally, I may say always, a spotted white and black hog; black spots on a white ground. The China hog I also well remember, the smallest of all the breeds of hogs, and the fattest. They were kept in many cases as pets, as they were nearly destitute of bristles or hair. There were two kinds, the black and the white, and sometimes black and white, (I suppose from a cross) the colors being in large masses, and not in fine spots as the Berkshires. They were much kept by the hucksters (on account of their great fecundity, and the ease with which they were kept,) for the purpose of supplying the market with roasters.

"The farmer's hog was a large framed, big boned animal, with long lop ears as big as a cabbage leaf, dangling down over his face, and generally two or three years old when they were fed. They were always dressed by singing the hair off with straw, and cut up into halves the whole length, first taking out the spare rib. It was salted in long oval tubs about a foot deep, and long enough to hold the whole side straight, where having lain a sufficient time, it was taken up and hung hock and shoulder, under the joists of the farmer's kitchen; and many times I have seen a dozen or two suspended under one ceiling in goodly array. It has in this state acquired the honorable title of a *flitch* of bacon. There it hangs and dries, and gets no other smoking, than what it receives from an ill constructed kitchen chimney, which often answers the purpose of smokehouse tolerably well. These flitches are sometimes whitewashed in the summer to preserve them from the flies; and when the good wife gets up on a chair, with the big butcher's knife, the slices she cuts off are rashers of bacon. So you will see that I think you have partially erred in your definition of 'Bacon.' It may be bacon without being smoked, but not without being dried; and I doubt whether a right old fashioned English plowman, would consent to call any thing by that name, which had its bristles taken off in any other way than by singing. The farmer who indulged in the luxury of cured hams, hung them up in his capacious chimney, where they generally burned refuse wood, brush, or other matters, and where they were smoked, no house being appropriated for that purpose."

Parasitic Animals.

It is a curious and interesting fact, that there is scarcely an animal from the highest to the lowest; from man, down through the whole series of organized existence to the microscopic infusoriæ, which is not the prey of other creatures, that find in their various organs and tissues a sustenance and a home, where all the changes of animal existence, nutrition, growth, and reproduction are carried on, frequently without the knowledge of the superior. To this class of animals, that live within and draw their subsistence from the bodies of others, the name of Entozoa has been given, and for the purpose of illustration we have copied from Prof. Silliman's Journal, No. 80, a figure of one of the species which infest that noble animal the horse.



Horse's Eye—(Fig. 47.)

The animal here shown belongs to the *Filaria*, a kind of worm, named from their round, thread-like appearance, and of which many species are known to exist in man and in animals. The worm in the engraving is a representation of one figured and described by Dr. Lee of New-York, as it was to be seen last year in the eye of a horse exhibited in that city. Dr. Lee says, "It was first observed in February last, (1839,) when it was about half an inch in length, since which it has increased so as to measure at present about four inches, resembling a portion of white thread or bobbin, with an enlargement at one extremity of half an inch or more in extent. The animal is confined exclusively to the anterior chamber of the eye, in which it swims with the greatest ease and activity, doubling itself in every direction and performing the most graceful and rapid evolutions." Soon after the worm was discovered, there was some inflammation of the eye, but this had passed away, and the eye when seen by Dr. Lee had as natural and healthy appearance as the other.

In the Transactions of the American Philoshphical Society is an account of a similar worm in the eye of a horse, furnished by John Morgan, M. D.; in this case the worm was white, three inches in length, like fine round bobbin; but instead of being confined to either chamber of the eye, it passed at pleasure and with great rapidity from one to the other, which made it much more difficult of observation than the one exhibited in New-York. The horse's eye was also much swollen and inflamed, and it was with difficulty that the eye could be kept open more than a few seconds at a time. The irritation produced by the passage of the worm over the extremely sensitive ciliary processes is supposed by Dr. Lee to have been the cause of this inflammation.

Singular as this fact of worms existing in the eyes of animals may be, and the cases we have selected here are by no means solitary, it is not this class of worms which are the most common, or of the greatest interest to the farmer. Many of the diseases of man and animals are now satisfactorily traced to these entozoa, and a short history of some of them cannot fail to be interesting.

1. *Cœnurus cerebralis.*—This parasite is found in the brain of animals, particularly that of sheep, and gives rise to that common and fatal disease called the staggers. It has an elongated, flattish body, and a head furnished with a rostrum, hooks, and suckers. Directions for its extraction may be found in works on the sheep.

2. *Cysticercus.*—Some species of this entozoa infest the muscular system of man, and have been found in the human eye. They are usually enclosed in a *cyst* or condensed capsule of surrounding substance. These parasites occur in animals, particularly the hog; giving rise to that condition of the muscles called "measly pork."

3. *Diastoma hepaticum.*—This is the fluke worm, found in the gall bladder and ducts of many ruminating animals; and from its being present in the liver in great numbers in the disease of sheep called the rot, it is supposed to be the producing cause of that fatal disorder. This parasite in its shape resembles a melon seed, is hermaphrodite and oviporous, and lives on the biliary secretions of the animal it infests.

4. *Filaria bronchialis.*—This animal is the cause of that distressing and fatal disease in cattle called bronchitis, and causes death by filling the bronchial tubes in such numbers that breathing is impossible. The disease called the Gapes in poultry is also caused by a filaria, (see Cultivator vol. 7, page 116, for an account of this disease and its cure in fowls.) It has been found in the lungs of persons suffering from consumption, and in the lungs of inferior animals when affected as they sometimes are with tubercles.

5. *Tænia solium.*—This is the tape worm of the human body, and frequently attains an enormous length. It is much more common in some countries than in others, though found in all. Those passed, rarely exceed twenty feet in length; but in dissections they have been found extending from the pylorus to the rectum, and then by no means fully stretched out. This is one of the most formidable parasites to which man is subject.

6. *Ascarus lumbricoides.*—This worm occurs in the hog, and the ox, as well as in man, and seems to produce little inconvenience unless occurring in considerable numbers. It is very common in children, and when found in great numbers, as it sometimes is, always indicates serious derangement.

7. *Filaria ovale.*—This is the hair worm found in fishes, found in the liver of some, and the muscular part of others. It is frequently observed in the sun fish of the lakes, in the summer season, rendering them unfit for eating.

8. *Filaria medinensis.*—This is the well known Guinea worm, found in warm climates, "most often seen in the morning dew, sometimes ten or twelve feet long and not thicker than a horse hair." This worm is insinuated under the skin, where it is felt like a tense string or wire, but though sometimes several feet in length, it produces little pain until the skin is perforated. Great care is required to extract this filaria without breaking, and when drawn out, its appearance is like an elastic white thread. It is found in various parts of the body, although most usually in the feet or legs.

9. *Filaria papillosa.*—It is well known that hogs in warm climates are sometimes attacked with a weakness of the loins, which causes them to drag their hind parts after them rather than walk, and frequently proves fatal. This disease is caused by a filaria which multiplies in the muscles of the loins, and causes paralysis of the hind legs. In some instances, where the hog was not too fat, making an incision on both sides of the spine at this part of the back, and making repeated applications of spirits of turpentine to the wounds, has produced a cure. The turpentine probably passes into the muscles sufficiently to reach and destroy the filaria. Horses are sometimes affected in the same way, and from the same cause. In the United States it is uncommon, but may be considered common in India.

10. *Oxyurus.*—This worm which grows to the length of two or three inches, is sometimes found in the lungs of animals, particularly swine, and is doubtless the cause of many casualties in that part of the farmer's stock. Animals in which they are found will sometimes fatten well, and appear to suffer no inconvenience from them; in other cases they form turbercles and evidently cause disease. They somewhat resemble some of the ascari.

The immense number of these parasitic creatures that have been discovered and classified, may be inferred from the fact that about 80 varieties of the *Ascarus* alone are known, and this is by no means one of the most prolific genera. The method of reproduction in some of them is involved in mystery, but some of them are certainly produced from ova, and Prof. Owen of London, the most celebrated comparative anatomist of the age, estimates the number of eggs in one *Ascaris lumbricoides* (the common worm of children,) which he examined, at sixty-four millions.

Perhaps the origin of these parasitic animals is one of the most difficult questions to solve, belonging to animal physiology. Were they only found in the intestinal canal, the opinion of Linnæus that they were taken in with the food or drink, and therefore were terrestrial or aquatic, would seem plausible: but such is not the case, the most secluded parts, as the brain, are infested; and besides if we except some of the filaria, those worms which infest animal bodies, are never found out of them. Writers on this subject are at this time divided into three classes, those who advocate the doctrine of their *spontaneous generation;* those who maintain that these worms, &c. "are produced by some living process or function of the organism, analogous to the secretion, lymph on a serous surface. An organized portion of matter is thus formed, under the influence of the vital principle of the original animal, which is afterwards thrown off, and becomes a separate being, and capable of an independent existence;" and those who attribute the origin and presence of worms, whether intestinal or visceral, in all cases to ova.

The doctrine of spontaneous generation, or that which supposes these animals to arise from an organized portion of the animal in which they are found, will probably find few advocates in this country, as to both there seem indispensable objections arising from the impossibility of there being any limit to the species produced, or any certainty in the order of their appearance, if these theories were true. Besides there has never been a well authenticated case of spontaneous generation, and a reference of any thing to such a cause, can be considered only as an admission that we do not know how else it could be produced. "If this theory were true, it is difficult to explain why the law should be confined to the lower order of animals, and not also extend to the higher. We should expect occasionally to see a man, a quadruped, or a bird, spring up from some dunghill or fermenting vat; but this is a phenomenon which even Ovid never dreamed of."

The microscopical discoveries of Ehrenberg have done much to elucidate the question of production and propagation of these various animals, proving as he has, that all are provided with organs of reproduction, and in many cases their fecundity and rapidity of multiplying is truly astonishing, thousands if not millions of ova being produced at a time. The old doctrine then, which attributes the origin of all vitality, to an egg or germ, is not likely to be falsified in this case; and it may reasonably be concluded that these creatures that exist in and prey on the higher order of animals, are produced and disseminated in this well known way. The distinguished observer just named maintains that these minute ova can be easily carried by the circulating fluids to every part and tissue of the animal system, but they only fix themselves or propagate in those places to which they are adapted. Thus the *D. hepaticum* is never found except in the gall and bladder, liver, and their ducts; the *F. bronchitis* only in the bronchial passages; the *A. lumbricoides* in the intestines; and the *Trichina spiralis* in the muscular tissue. Those who are acquainted with the writings of some of the most distinguished physiologists, such as Bremer, Blumenbach, and Rodolphi, are aware that numerous instances have occurred in which the existence of worms in the fœtus of man and other animals, and in the intestines of birds just from the shell, was fully proved; and the only rational mode of accounting for their appearance is, that they were derived from the circulation of the parent. It is probable that in this way, viz. by circulation in the blood, the ova of the filaria reached the eye of the horse, where, finding suitable food, it remained until it reached the size shown in the engraving.

Agricultural Census of New-York.

We avail ourselves of the returns of the Agricultural Census of the State, made by the direction of the United States, and lay it before our readers as one of the most interesting statistical tables that has yet appeared. We shall present the table, giving the aggregate of the U. States, as soon as it appears. We may append a few remarks.

Items	*Aggregate.*	*Items.*	*Aggregate.*
Horses and mules,	476,115	Tons of hay,	3,160,916
Neat cattle,	2,202,438	Pounds of cocoons,	2,103
Sheep,	5,381,226	Pounds of sugar,	10,093,991
Swine,	1,916,964	Cords of wood sold,	1,088,048
Poultry of all kinds, estimated value,	$2,373,029	Value of the produce of the dairy,	$10,497,032
Bushels of wheat,	11,853,507	Value of the produce	
Bushels of barley,	2,498,170	of the orchard,	$1,722,257
Bushels of oats,	20,728,738	Galls. of wine made,	14,710
Bushels of rye,	2,984,913	Value of home made	
Bush. of buckwheat,	2,244,438	or family goods,	$16,335,675
Bush. of Indian corn,	10,085,142	Value of roduce of market gardens,	$462,308
Pounds of wool,	14,093,134		
Pounds of hops,	362,762	Value of nurseries	
Pounds of wax,	184,021	and florists,	$76,550
Bush. of potatoes,	30,000,608	Number of pers ns employed,	528
Pounds of tobacco gathered,	6,867	Capital invested,	$286,608

It will be remembered that the census relates to the year 1839, so far as the products of crops are concerned, and that the yield of these in general was much less, particularly in wheat and corn, than in 1840. There are evidently some errors in the report, as printed, such as the number of sheep in Onondaga County, and some minor ones we have noticed; but these may in part be considered incidental to a first attempt, and will not be likely to recur hereafter. To *perfect* accuracy in details, such estimates can make no pretensions; still they furnish a mass of facts most interesting to the statesman and all who take an interest in the progress of the country. From the State census of 1835, it appears that the number of neat cattle was then 1,885,711, giving an increase in five years of 316,727. The number of horses and mules was then 524,895, being a decrease of 108,420. The number of sheep was then 4,261,765, increase 1,126,460. The number of swine then was 1,554,358, showing an increase of 362,595. It will be seen at once that it would have been very interesting to have been able to have gone through the present table and compare the results; but with the exception of these items, agriculture was entirely left out of the State census. Such an omission we hope will not occur again, and as the United States will probably follow up the system so well commenced, we may hope to be able to review our progress once in five years hereafter, and doubtless with the best results.

Diseased Peach Trees.—A correspondent of the Farmer's Cabinet, who has evidently had some acquaintance with the subject on which he treats, says, "The most effectual remedy for unhealthy trees I have ever seen tried, is to lay bare the immediate roots around the trunk of the tree, and apply plenty of soap suds."

The Morello Cherry.—Such has been the spread of that enemy of the plum and the cherry, the black blight or canker, that these favorite fruits are fast disappearing from some sections of our country. As the carefully cutting out these excrescences from the plum tree, as fast as they show themselves, will preserve that tree, it is probable the same effect would be produced by a similar treatment of the cherry when attacked. Mr. D. W. Neil states in the Frederick (Va.) Herald, that some six years since he removed from a Morello cherry all the black knotty excrescences that had appeared, and by continuing to do so each year since, when they have shown themselves, the tree is still doing well and produces fine fruit.

Original Communications.

"In Agriculture, Experience is of great value—Theories of little, excepting as they are directly deducible from actual experiments and well attested facts."

Loretto, Va. March 16, 1841.

Messrs. Gaylord & Tucker—If the only object of my humble efforts to aid our cause, were the approbation of my agricultural brethren, the favorable notices bestowed on these efforts by yourselves and some of your numerous correspondents, would induce me to make no more, lest I should forfeit by future attempts, all the commendation which the past have already procured for me. But much as I confess that such approbation has gratified me, I prefer risking the loss of all I have gained, rather than to be suspected of acting solely, or even chiefly, from so selfish a motive. I shall therefore continue my communications from time to time, or at least so long as you continue to publish them; for *that* circumstance will satisfy me, that you yourselves believe they may contribute something worth a place in your paper, towards promoting the great ends I always have in view, which are, the improvement of American Husbandry, and the elevation of our class to its proper rank in society. Once for all, let this suffice for an explanation, (should any be deemed necessary,) of the motives which have induced me so often to write for the Cultivator. A small degree of success will be deemed an ample reward for my trouble; and should I fail, the consciousness of having earnestly and honestly labored in so glorious a cause, will console me for my disappointment.

A few more preliminary remarks shall bring me to the subjects of my present communication.

There are certain duties to ourselves and others, which are very seldom regarded by young persons as matters of any immediate or particular importance; much less as indispensable to the prosperity and welfare of all mankind. Many of these duties apply chiefly to that portion of those devoted to agriculture, as I propose presently to show; premising, however, that the serious consideration of a single fact, ought to convince all who are thus engaged, of the absolute necessity, the paramount obligation to fulfil them. It is, that if we habitually neglect them in early life, we inevitably subject our latter days to very many grievous losses and crosses, for which no remedy whatever can then be found. The acquisition of wealth and respectability—of health of body and peace of mind—of all the conveniences, comforts and enjoyments of life, depends upon our strict and faithful performance of these duties. And although some of them may seem in their enunciation, to be mere prudential and economical precepts, applicable chiefly to our own individual domestic concerns, yet the greater part will be found, upon due consideration, to involve momentous moral obligations. Being now an old man, I can confidently affirm, that I not only believe, but *know*, all which I have said, or shall say of them, to be true to the very letter—having witnessed numerous most distressing instances of whole families reduced to extreme want, by the failure of those upon whom they depended—constantly to inculcate, both by precept and example, the absolute necessity of unceasing obedience to these duties. Most sincerely therefore, do I hope that at least the youthful portion of my agricultural brethren, in whose welfare I feel the deepest interest, will take my word for it, when I solemnly assure them, that the strict and faithful observance, while they are young, of the maxims and precepts to which I am about respectfully to solicit their earnest attention, is the *only thing* that can possibly secure them in old age, from sufferings, for which they may seek, but will never find entire relief on this side the grave. I mean not to affirm that *all* are equally essential, for I speak of them in the aggregate. But if my young friends postpone the adoption of the most important of these salutary rules of conduct, as is too commonly the case, until their own bitter, dear-bought experience forces upon them the full conviction of their inestimable value, it will then alas! be too late—utterly, irretrievably too late.

Permit me now, to present them for the special consideration of the youthful portion of my readers; and to express the earnest hope, that they will regard them as the offering of one of their most sincere and devoted old friends, who may now, perhaps, be addressing them for the last time.

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Maxims and Precepts for Young Farmers.

I.—Regard all persons whose time and labor are wholly at your command, as beings for whose health, comfort, and good conduct in this life, you will be held most fearfully responsible in the life to come.

II.—Never forget that both moral and bodily health depend on the same thing; that is, *temperance* in food, drink, and all sensual indulgences; and *temperance* in the use of means to get rich.

III.—To *wish well*, is not enough; you must also *do well*, or your benevolence, like faith without good works, will be dead and utterly worthless.

IV.—Ever bear in mind, that useful knowledge, and the proper application of it, are to the health of the soul, what wholesome food and appropriate exercise are to the health of the body.

V.—Value as you ought, the experience of others, and your own will cost you far less than without such aid; since to use theirs costs only an effort of memory, whereas the price paid for your own will often be the loss of health, fortune, and character.

VI.—The more you strive to enrich your minds with every good thing which men and books can teach, the greater will be your power to gain wealth, honor, fame, and every rational enjoyment.

VII.—Trust not others to do for you, what you can readily and as well do for yourselves.

VIII.—The farmer who is ashamed of manual labor, will very soon find cause to be much more ashamed of himself.

IX.—If you ever make a business of your pleasures, they will most assuredly soon make an end of your business.

X.—Leave show to spendthrifts and fools, while *you and your families* consult only tasteful simplicity, comfort and usefulness, in all your arrangements and expenses.

XI.—Love not money for its own sake; still less for the power it gives you to gratify selfish and sinful passions. But fail not to regard it as the most efficient means to accomplish all benevolent purposes. You will thus make it a blessing, instead of a curse, both to yourselves and others.

XII.—True economy, consists not so much in saving money, as in *spending* it when made, *solely and judiciously* for purposes really useful. This annually increases your profits, instead of diminishing or keeping them stationary.

XIII.—Avoid debt as you would a pestilence, for it humbles, debases, and degrades a man in his own eyes; subjects him to insults and persecutions from others; but still worse, it is a perpetual temptation, however anxiously resisted, to fraud, falsehood and theft—nay, not unfrequently, to despair and self-murder.

XIV.—To take advantage in a bargain, is *virtually* to take money out of another's pocket, who is not aware of it. Worldlings call it "*fair play*," but all honest men call it "*cheating and swindling*."

XV.—The only just means of increasing wealth, are constant industry—true economy of time as well as money—well directed labor, and the regular application of a portion of our fair profits to increase our capital.

XVI.—Never expect your lands to give you *much*, if you give them *little*; nor to make you *rich*, if you make them *poor*. Therefore, always manure them to the full extent of your means, and they will ever make you ample returns in rapidly increasing productions.

XVII.—Economy, not less than humanity, requires you to keep all your farming stock in thriving condition; for a working animal in good order, will do much more work, and eat less than a poor one; while the rest of your stock, *well kept*, will yield more of every thing, than double their number, if half starved, as such animals often are.

XVIII.—To "*save at the spigot, and let out at the bung*," will soon empty the biggest hogshead; so will economy in small matters, and waste in large ones, speedily squander the largest estate.

XIX.—In all your farming operations, never forget that *time*, like *money*, if once lost or mis-spent, is forever past recovery.

XX.—Constantly arrange beforehand, the daily work of your farms. Then none of your laborers need ever be idle in waiting to be told what he has to do.

XXI.—Provide a place for every thing, and misplace nothing. No time will ever then be lost in searching for what you want.

XXII.—Keep double sets of such plantation implements as are most used, and most exposed to wear and tear. The whole cost of extra sets, will be amply repaid by saving the whole time lost in waiting for repairs, where only single sets are kept.

XXIII.—Never resort to what are called "*make shifts*," when it is possible to avoid it; for they encourage carlessness and sloth, of which they are almost always sure signs.

XXIV.—The very reverse of the lawyer's maxim—"*de minimis non curat Lex*,"—the law regards not the smallest matters—must be the farmer's guide, or his largest concerns can never prosper as they might.

XXV.—To keep good gates and fences, saves much time and labor in preventing trespasses; much loss of crops from depredations; and best of all, it saves much wrangling and ill will among neighbors, about mischievous stock.

XXVI.—If you would excel in your profession, the diligent culture of your mind is as indispensable as that of your fields.

XXVII.—Never commit the self-hurtful folly of looking upon any of the honest trades, p ofessions and callings, as inimical to your own: for there is a natural bond of interest and amity between *the whole*, which cannot possibly be preserved, without the cordial co-operation of *all*.

XXVIII.—Encourage, both by precept and example, the true spirit of Husbandry; for it promotes harmony, good will, and social intercourse among all with whom you deal; it tends to elevate your own class to its proper rank; and above all, it advances the welfare of your country, by promoting the most important of all her great interests.

XXIX.—Never flatter yourselves, as some silly people do, that you know all which can be known, even of the most simple branch of your profession, or you will soon know much less than thousands of your more modest, less assuming brethren. But always act under the firm belief, that there is no ascertainable limit to our acquisitions in any art or science whatever; nor any difficulties which constant, diligent study can not overcome. Your progress, then, towards the highest attainable point in whichever you prefer, will be as sure as fate itself. The accidents and vicissitudes of life may possibly interrupt your course; but *only persevere*, and you will finally conquer, with absolute certainty, all obstacles that are not insuperable.

And now, Messrs. Editors, suffer me in conclusion, to address a few deprecatory remarks to the older class of your readers, lest they should possibly suppose I was vain enough to believe, that there was something new to them in what I have just written. My only purpose was the one first avowed; and that is, to endeavor to render some service to my youthful brethren, upon whose characters and conduct so much of their country's good depends; by imparting for their special use, the results of many years experience and observation. In executing this purpose, it occurred to me that to give these results the form of detached maxims and precepts, would probably be more apt to engage their attention, than if I presented them in the more diffuse, connected style of an essay or lecture. With this explanation I leave them to their fate; but with the confident hope that all will approve the motive which prompted them, whatever some may think of the matter and manner of the author. Yours, with regard.

JAMES M. GARNETT.

P. S.—Your correspondent, Mr. George H Chrisman, has requested to know "the character of the soil and subsoil upon which my experiments were made," with cow-pen manure alternately plowed in, and left on the surface, until the following spring; and it gives me pleasure to give him the required information. The soil was dry, shallow, somewhat light, and of a greyish color, with a large mixture of sand. The subsoil was of a pale yellow color, gradually deepening, but still having a considerable portion of sand, to a depth beyond the reach of any plow. The texture however, of the soil, and it been stiff, would not very materially varied the result, if my conjecture be correct, which is, that the fertilizing principles of all vegeto-animal manure, (unless perhaps it be the gases they contain,) *sink* more or less, as soon as the rain dissolves them; and to a depth, in *all arable soils*, if plowed or spaded in, several months before seed-time, below the roots of any but long, tap-rooted plants. If the power of the sun to exhale these principles, were stronger than that of the soil to absorb, to amalgamate with, and to retain them, *then*, even to bury them by the plow, would not secure them in the earth; for we all know that evaporation is constantly going on, and from a great depth below the surface.

With your permission, I will take this opportunity to say a few words to another of your correspondents—Mr. F. H. Gordon, of Tennessee. In the first place, I beg him to accept my thanks for his favorable opinion of myself and my newspaper labors, and to assure him that it would gratify me much to see at my house, either him, or any other such good friend to Agriculture, as he appears to be. But candor requires me to tell him, (and to my shame be it spoken,) that he would find me to be one of those very numerous volunteer teachers of good doctrines and their application, who are far from always "practicing what they preach." This however, should not invalidate the doctrines themselves, nor the most approved modes of applying them; since if it did, the progress of mankind in any branch of knowledge connected with practical morality, would be infinitely slower than it has ever yet been. Once convinced that a thing is right, we must not wait to do it for the example of our instructors, much as they are in duty bound to give it, but commence the good work, without delay, or we may lose the opportunity altogether.

I concur entirely with Mr. Gordon, in thinking that the best use our government could make of Mr. Smythson's legacy, would be to establish with it a great National School of Agriculture, connected with a National Agricultural Society and Experimental Farm, upon which annual fairs should be held. But I much fear, that if Congress should ever be willing to spare sufficient time from their seemingly endless party quarrels, to attend to a matter apparently of such inferior interest to them, as the appropriation of this most munificent and philanthropic gift, their inquiry after the money will be a "*non est inventur*;" and this I say without any allusion to any person or persons whatever; for I know not what has become of the cash.

In speaking of the means most likely to effect the establishment of a National Society of Agriculture in connection with a great Agricultural School, Mr. Gordon asks:—"Cannot half a dozen such men as Mr. Garnett, induce a few prominent members of Congress to take a prominent stand in favor of the measure?" In reply, I have it in my power to assure him, that *one* "such man," even Mr. Garnett himself, did, during the past session, write to three prominent members of that body, on the subject of a National Agricultural Society. Two of them were members of the lower house, and one of the Senate. From the two M. C.'s he received a letter each, full of kind expressions and as much praise of the scheme as the most sanguine among us could possibly desire; but pronouncing the *times* decidedly unfavorable to its consummation;—ergo, *they* were not the men to attempt it. Of course, I neither wished nor expected they should, contrary to their own opinion. From the prominent Senator alluded to, I received a letter, in which he expresses the liveliest interest in the cause of Agriculture; a strong wish to promote it; and an assurance, that should any meeting be gotten up, at the extra session of Congress, for establishing a National Society of Agriculture, he will give it all the attendance which his official duties will permit. This assurance has inspired me with a degree of hope which was almost extinct; for confident I am, that if such a meeting should take place, *that* Senator's moral influence alone would be almost sure to accomplish its object.

Canada Thistles.

Messrs. Gaylord & Tucker—In the last Cultivator, I find an inquiry as to the best method of destroying Canada thistles; in answer to which, I propose to give to the public through the Cultivator, some part of my experience and practice on the subject. For large pieces, the best method is to plow them several times in the course of the season; this may be done without inconvenience on summer fallows, or fields to be plowed the season following; for small pieces, covering with turf, I have found the most effectual. Cutting with a sythe or hoe, will undoubtedly have the desired effect, but is attended with far more labor than covering, on account of its having to be so often repeated. The main root of the thistle grows in a horizontal direction, with buds at a greater or less distance; each of those buds sending up a thistle. I know not to what length those roots will grow, but I have traced them over thirty feet, and found their appearance very similar the whole length; consequently if we pull up the thistle, unless we break it from the horizontal root, so as to destroy the bud, it will sprout again; or if we cut it with a sythe or hoe, it checks the growth for the time being, and as far as the main root depends on the exposure of the sprouts to the light and air for support, so far that is checked in its growth. Judge Buel compares the leaves of plants to the lungs of animals, and says they are as essential to their existence; if so, it is obvious that the complete destruction of the plant, deprives the root of further nourishment, and the desired object is attained. For small pieces, I use a spade, after the plant is six or eight inches high, and cover thin with turf, repeating it whenever more plants appear that much above the ground. Three operations is generally sufficient with the spade; the plough generally requiring more, as it is not so effectually done. Thistles, before the horizontal roots are formed, may be destroyed by once pulling. Pasturing with sheep for several seasons, will very much reduce the number and size of the thistles, and I once thought I should succeed in clearing a field in that way, but on plowing again, I found some left. Sowing with buckwheat, will diminish them very much, and I believe a succession of such crops would entirely destroy them; my experience however, goes no farther than two years. I do not suppose the crop has any tendency to destroy the thistle, but the season of plowing is the most suitable for their destruction.

The larger the thistle, when plowed under, the more likely to be destroyed. There should be no part of the leaves exposed from which the roots can receive support.

DANIEL S. CURTIS.

Canaan Center, N. Y., March 11, 1841.

"Bulleting."

"A Subscriber," at Connellsville, Pa., who inquires respecting the efficacy of the process called bulleting as practiced in Kentucky as a substitute for spaying, is informed that so far as we have been able to learn, the practice, as with him, has been a failure when attempted in this part of the United States. It is probable that spaying is to be preferred, as not essentially more difficult of operation, and certainly effectual in its results.

Shearing of Sheep.

MESSRS. EDITORS—In the last number of the Cultivator, I served up a partial dish to your readers on the subject of "*tagging and washing of sheep*," with an *expose* of the abuses connected therewith.

It is my intention to be equally practical on the present subject, and quite as plain in my condemnation of the slovenliness, and I regret to say, *frauds*, which not a few farmers designedly practice on the manufacturer, during this process. I do not indulge the expectation of being able to enlighten my brother *veteran* wool-growers; my purpose being to throw out some available information for the benefit of those less experienced than myself; and I will add, to endeavor to impress upon all, the importance, on the score of national reputation, as well as the promotion of individual interest, of elevating the character of our wool in point of cleanliness, to at least the standard of that exported by the "*retired gentlemen*" of New South Wales and *Botany Bay*.

The proper time for shearing, varies of course, with the climate; it being a violation of humanity to attend to this important matter before the weather is sufficiently warm. At the eastward, the time chosen is from the 10th to the 20th of June, and in western New-York and Pennsylvania, from the 1st to the 10th. There are seasons, when it is impolitic to begin as soon; but at all events, let me here warn the inexperienced never to commence until the weather is really warm; otherwise, there will frequently be a loss of life, or a foundation laid of diseases, which will eventually lead to the same result. This remark is particularly applicable to the finer grades of sheep. A period of a week should elapse—unless the weather s exceedingly warm—between washing and shearing, in order that the wool may become perfectly dried, and more especially, the oil diffused through the fleece. There is an advantage in this, for the reason that the fleece is somewhat increased in weight, and animation and softness are restored. A writer in relating the Spanish custom, says—"Their shearing buildings are very simply constructed, and consist only of two large rooms, each of which will contain more than a thousand sheep; there is also a narrow, low, long hut adjoining, termed the *sweating house*. The sheep are all driven into one of these apartments, and in the evening, those intended to be shorn the following day are transferred into the low long hut. As many are forced into it as it will possibly hold, and there they are left during the night. As some are liberated in the morning, the others are urged towards the end of the hut, while more from the apartment occupy their situation. In consequence of this close confinement, they are thrown into a state of great perspiration; the yolk, which formed a somewhat hard crust on the fleece, is melted, and thus the whole is rendered *softer*, and is *more easily cut*." This last remark will appear very obvious to a *practical* shearer, as he very well knows that an "oily fleece" cuts easier than a dry one. But the Spanish custom seems barbarous and inhuman, for it must necessarily cause much suffering to the sheep; yet I acknowledge it is somewhat necessary, considering the indurated nature of the yolk peculiar to the Spanish Merino. The writer above quoted, further says, "from 150 to 200 shearers are generally collected, and a flock of a thousand sheep is disposed of in a day, although *five rams*, or *eight ewes* are reckoned a good day's work for a Spanish shearer!" "A lazy set of rascals there, that is clear," says my honest neighbor, Ben Rogers.

It would be proper here, to refer to the inconveniences which many farmers suffer, for want of the proper spirit to rectify them, in regard to yards or pens, for the reception of their flocks; but other matters of more importance, urge me to defer it to another time, when I will give you a plan of my shearing house, and the necessary appendages.

My subject next leads me to remark, how rare is a good shearer? This, considering the aptness and skill of our countrymen in the mechanic arts, and I may say, in all the diversified divisions of labor, appears somewhat singular. It is easily to be accounted for however; the causes are several, the principal of which must be laid to the door of farmers, for the generality are too apt to appreciate a shearer in proportion to the number of fleeces he takes off in a day, not being particular *how* it is done. The consequence is, that the learner "cuts in," and recklessly dashes ahead to accomplish what is called a day's work; and the errors that he then contracts, unfits him ever afterward from attaining perfection in the art. This standard must be thrown aside, otherwise good shearers will continue to be, as now, few and far between. The most skilful man at this business, is he who will shear from thirty to forty full grown sheep in a day, cuts the wool with one clip of the shears, and not in twain, as one shearing too fast will do, shears even, leaves the least wool, and cuts not the skin; one that will do all this, is a good shearer. On the contrary, if a man attempts to shear much beyond the above number, he will violate either a part, or the whole of these rules; and the wool which the sheep will carry away will far more than amount in value to his wages.

With a view to increase the number of *good shearers*, it has been my practice, for a number of years past, to teach some of my monthly laborers this important art; and if your readers will bear with me, I will inform them the points of instruction. The first is, to teach them how to catch a sheep, which I am free to say, not one in five hundred understands. I shall not attempt to describe the common and inhuman method, which might, however, be well compared to the rough and tumble manner of a dog dragging a wood-chuck from his burrow. My way is, to throw the right arm around the body of the sheep, grasping the brisket with the hand, then lift it, and with the other, take every thing off adhering to the feet, particularly straw, which, otherwise finds its way upon the floor, and thence into the fleece. This is one of the sorts of *hair* too often found in the *butter*. The next step is to teach him how to *hold* and *cut* with his shears, for otherwise, there are ten chances to one that he will contract a bad habit, which will result in his cutting not only wool, but as honest Ben says, "as much hide in the course of the day, as will serve for a good sized leather apron." After this, he is taught those positions of the sheep which will much facilitate his work and afford the least pain to the animal; besides many *little* matters not essential to mention, but an observance of which is necessary to prepare the way for perfection. Let your pupil take it easy the first day, and keep him as *cool* as possible, although if you mark how the sweat rolls from the poor fellow, you will think it rather difficult. But let him blow, and give him the line: ten or twelve is enough for him the first day, otherwise he will complain of shearing being a back-breaking business; then succeeds dislike to it, and adieu to his ever arriving at skilfulness. By adopting a judicious course you will fetch him under the yoke. For instance; several years since one of my monthly hands, who was previously wholly unacquainted with the art, commenced and sheared fifteen the first day, and after a service at it of five or six successive days, by exciting his ambition with encouraging language, he accomplished nearly double that number; and the following year he sheared forty per day, and performed his work admirably. This is only one of several instances which was followed with like success.

Now it is the practice of very many wool growers to employ only those who profess to understand the art already; if we all did so, when decrepitude and death had thinned their ranks, where would we look for shearers? One of my neighbors told me, "that he could not even teach a hand to catch a sheep to suit him, much less to shear it." "Do not be so particular," said I, "all beginners are bunglers, and become expert and skillful only by practice; instead of fretting and scolding, speak kindly and encouragingly; say to him the second was sheared better than the first, and the third still better than the second, and then you'll 'come Yankee over him,' not without." It appears to me, Messrs. Editors, if the plan I have adopted and recommended, could become general, we should soon increase the number of good shearers, and thereby remedy one of the many evils, namely, in numerous instances, of allowing sheep to run *too long after washing*.

I will now quote from a London publication, the English *modus operandi*, in reference to this subject, as generally, although not uniformly, followed throughout the Kingdom.

"A barn or shed into which plenty of light can be admitted near the shearers, should be selected, and a part of the floor covered with a large canvass sheet, on which two shearers can operate. The sheet should be nailed down, and a little straw placed under it to soften it as a cushion. The floor of the barn should be swept out quite clean, and a light broom should be at hand to sweep the sheet when necessary. Every thing being arranged, a shearer seizes a sheep and sets it on its rump, and keeps it in this position by resting the back against his own legs. He removes all straws, thorns, burs, &c., that may have adhered to the wool. While thus held, the wool is removed from the head and neck so far as the shoulders, and also from the belly, the scrotum, and the edge of the thighs. The head of the animal is then bent down sideways, and the shearer, placing a leg on each side of the neck of the sheep, pushes out the opposite ribs by pressing his knees gently against the ribs that are nearest to him. He next shears the wool from the far side with his left hand, from the belly to the middle of the back, and as far down as the loins. The sheep is now turned, and the right hand is employed to shear the wool from the near side. The sheep is then laid flat on its side, and kept down by the shearer with his face towards the rump of the sheep, resting his right knee on the ground in front of the neck, and his right toe being brought to the ground a little behind and below the poll; the head and neck of the sheep are thus confined by his right leg, while he uses his right hand to shear the wool from the hind quarter. In this way the clips of the shears will appear in concentric rings round the body of the sheep. The dirty portions of wool about the tail are then removed by the shears and kept by themselves; the outside of the fleece is folded inwards, beginning at the sides, and narrowing the whole fleece into a strip about two feet wide. The strip is then rolled firmly up from the tail end towards the neck, the wool of which is stretched out and twisted into a rope, and wound round the fleece to give it a cylindrical shape."

This method meets my approbation, although it varies somewhat from rules to which I have long adhered. A few days before the commencement of shearing, the floor of my shearing house is thoroughly scrubbed; on which stands, during the process, two long benches or tables, placed against the long side of the building, which are some 12 feet in length, 4 in width, and about two in height; one of which is used for rolling the fleeces, and the other for the sake of convenience, for placing them on until it is full, and from them they are removed to the wool loft in the second story. After the shearer catches his sheep, if it is in the least filthy, (which by the way is rare in my flock, owing to having been well *tagged*) it is at once carried to the door, and the dirty wool taken off, in order to prevent its being intermingled with the fleece, which cannot otherwise be well avoided. Then the shearer resumes his particular stand, placing the sheep on its rump, and instead of beginning on the head and neck, according to the English mode above quoted, commences on the brisket, thence down the belly and about half of the sides to the edges of the flanks; also the thighs inside and out; after which he ascends from the brisket along the neck, cutting the front and both sides of it, as well as both sides of the head. The sheep is then laid flat on its side, its neck being between the knee and toes of the shearer, he cuts in a continued line from the flank to the poll until the line of the back is reached; the sheep being then carefully turned, to permit the fleece from being torn, the other side is served in the same way, which completes it. The sheep is then taken near the door, and the legs are neatly trimmed, all the wool of which, that is of any value, is scraped up and put in a large basket; all else is swept out of doors. Then the sheep is marked, not the ears, for this is done when they are lambs at the time of weaning, but with an iron formed to represent the letter O, or a diamond, with a handle attached, and with black paint, marking the ewes upon the left shoulders, the wethers on the right, and the bucks on the rump. This is surely much better taste, than a huge daub of Spanish brown, or ill formed letters made of tar, and covering the whole broadside of the sheep.

The fleece having been removed from the floor to the rolling bench, the dirty locks, if any, are put into the basket, the good put with the fleece, and the shearer's stand swept clean. The fleece is carefully spread out, the inside next to the bench; after which it is pushed together from all parts, for the sake of compactness and ease of rolling; the skirts and ragged sides separated, and thrown into the center; all the sides are then laid over so as to form an oblong square; after this the long sides are rolled towards each other till they meet, which is done by resting one of the arms from the elbow flat upon the wool, and rolling with the other (which by the way cannot be very well done without the aid of a boy) making a strip of from 6 to 10 inches in width; next the boy rolls from his end and stops at the middle, where he is met by my end, and then his part is rolled on top of mine, where it is held until the twine is passed around and tied; after which I pass the twine around crosswise, which effectually secures it, no matter how roughly handled. This mode differs from many others, but it has ease and despatch to recommend it. I have for many years rolled, with the aid of a small boy, all the fleeces shorn on the farm on which I reside, and have had no difficulty in keeping up with six or seven shearers, besides attending to the floor. One word here in regard to securing fleeces. Mr. Lawrence, in his letter appended to my last communication, recommends the example of his friends, H. D. Grove and Daniel Rogers, which is, to bind the fleeces by twisting a band from the tail or flanks. I fear not until all our flocks have been brought to the requisite fineness of those gentlemen, will the course he commends be adopted, for the reason that wool growers in general do not like to expose the coarsest part of the fleece. Small and very fine wooled fleeces can be thoroughly secured in this way; not so with medium or coarse. It is too bad however, to make the manufacturers pay for more twine than is necessary; *sixty-six feet* around each fleece is just twenty times too much. [Vide the letter above referred to.] My fleeces after being folded and secured, represent somewhat the form of a cheese, which enables me to store them in my wool loft, without falling down, or presenting a slovenly appearance. I arrange my wool on three sides of the store room; so as to represent the ascending seats of an amphitheatre; and in this situation—excuse my laudable vanity—it would do your eyes good, gentlemen, to take a look at it.

I have already alluded to the inhumanity of beginning to shear before the weather is suitably warm. I again warn the inexperienced against the cruel practice of permitting sheep, immediately after they are shorn, to be exposed to *cold rains*, for it not only causes excruciating suffering, but death will be often the result, especially if the sheep are grades of the Merino and Saxony. This hint will be approved by every old wool grower, for there are few of us who have not had our knuckles well rapped by neglect of it. A warm shower need not alarm; but I repeat, *beware of cold rains*, and let your sheep be driven under cover at the very commencement of it, and you may rely from their extreme sensitiveness to cold at this time, they will gladly remain until it is over.

At the time of shearing, there are other matters requiring particular attention, namely, sawing of horns which are likely to grow into the head or eyes of the sheep, and cutting the hoofs, which, with fine wooled sheep, not uncommonly grow to an uncouth length. Formerly, I attended to these things at this time, but I have learned that shearers are so careless, unless constantly watched, they are liable to let some go, not minding this attention. One thing at a time, whatever it is, secures its being well done. There are other matters, also, which I will refer to in my next chapter.

It was my intention to have "showed up" the abominable frauds practiced by many farmers on the manufacturer, by enclosing within the fleece, *dung locks and trash* of all descriptions, with a view to increase its weight. But, gentlemen, it is a lovely day, and to attempt it, would only destroy my present very amiable mood; besides, I have already encroached much farther on your valuable columns than I intended. *Apropos* the anecdote of the "traveler and hostess," which will suffice, and brings me to a conclusion.

Once upon a time a traveler stopped at an inn and called for a repast, which, on being spread before him, he discovered something which caused not a little disgust, and at once betrayed the sluttishness of the hostess, namely, *hairs in the butter*. The traveler being possessed of more than an ordinary share of equanimity of temper, instead of being indignant at this outrageous departure from the *clean thing*, he only mildly and graciously requested of her ladyship, that the next time he called, she would oblige him by putting her hairs on one plate, and the butter on the other; and if he thought it desirable, he would *mix* for himself. So with the manufacturers. If we will persist in enclosing within our fleeces, *filth, burs*, clippings, &c., they implore us to put *all that sort o' thing* in one sack, and our *clean wool* in another, in order that they may determine the relative value; and peradventure they find it to their interest to *mix* them, that they may have that privilege to themselves. But they greatly prefer, for our especial benefit, that we retain all "ding balls" or lumps of manure, for the improvement of our soil.

Now, my brother wool growers, inasmuch as we may *surely* depend on receiving remunerating prices for the coming clip, let us clear the track, all start fair, and go for a *clean* race, and the prizes will be a *clean price*, and *clearer consciences*.

Yours truly, L. A. MORRELL.

Lansing, Tompkins Co. N. Y., Feb. 26.

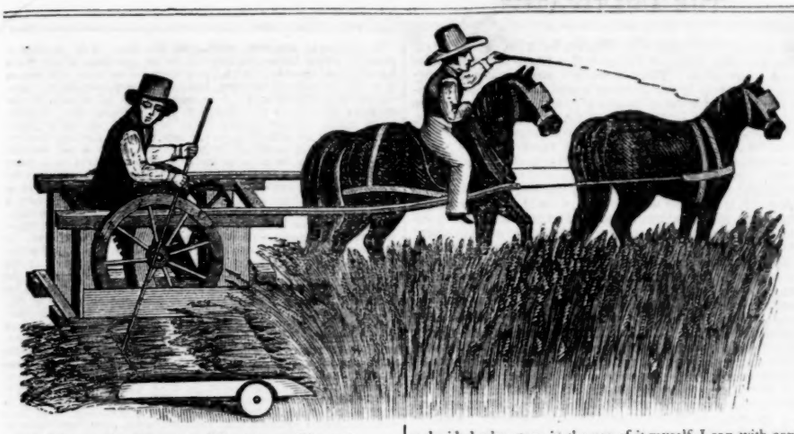
Transportation of Cattle.

MESSRS. GAYLORD & TUCKER—The calls have been so frequent for information as to prices for transportation of cattle, pigs, &c., that to save future inquiries, I send you for publication, the following. Messrs GELSTON & EVANS, responsible forwarding merchants of Buffalo, as agents for "The Western Transportation Co.," will forward them during the coming season, at the following rates, and furnish them ordinary food and attention on their passage:

For grown cattle between New-York and Buffalo,	$16 00
One pair young pigs in compact box,	4 00
One sheep,	4 00
For grown cattle between Albany and Buffalo,	12 00
One pair pigs in box,	3 00
One Sheep,	3 00
For grown cattle from Buffalo to Detroit,	7 00
One pair pigs in box,	1 50
One sheep,	1 00
For grown cattle from Buffalo to Chicago,	15 00
One pair pigs in box,	4 00
One sheep,	2 25
For grown cattle from Buffalo to Portsmouth, thro' the Ohio canal to the Ohio river,	16 00
One pair pigs in box,	4 00
One sheep,	4 00

There is no species of freight so variable in price, as live stock; it being a most undesirable article of transportation, it is always avoided when other freight is to be obtained; and it was with considerable reluctance, Messrs. G. & T. were willing to name prices at which they are willing at all times to carry them. It may be proper to add, that where persons accompany stock, and furnish their own food and attention, the price would be considerably lessened; or if a considerable lot was sent at once, and especially during the middle of the season, when freight is less abundant. Respectfully yours,

Buffalo, March 20, 1841 R. L. ALLEN



Hussey's Reaping Machine.—[Fig. 48.]

Messrs. Gaylord & Tucker—At the request of several farmers of your State, I send a description of my Reaping Machine and its mode of operation, accompanied with such certificates as I can procure near at hand. The machine consists of a low frame resting on a pair of common wheels, with fills for one horse; the second horse is geared tandem. The main axle is square in the hubs of the wheels; on this axle is a cog wheel which communicates motion to the cutters. The part thus far described, follows directly behind the horses, and wholly on the stubble; the right wheel tracking very near the standing grain. A platform about five feet square extends from the right side of the frame, one edge of which is attached to the frame by hinges; the opposite edge rests on a truck wheel. This platform lies near the ground and can be regulated to cut a stubble from 5 to 12 inches high.

The cutting apparatus is placed on the front edge of the platform, and is constructed as follows:—A number of steel blades, 4 or 5 inches long, about 3 inches wide at the base, formed like lancet points, sharp on both edges, are riveted on an iron rod side by side, forming an instrument something like a coarse saw. In addition to this, there is a row of strong iron spikes fixed firmly to the edge of the platform and pointing forward horizontally; each spike is formed of an upper and a lower piece, leaving a space through each spike for the blades to play in. As each blade occupies three inches on the rod, so there must be a spike to every three inches of the platform. The rod on which the blades are riveted, is moved by a crank having a sweep of three inches, causing all the blades to move at once; each blade vibrating between two spikes, passing out of one spike into the other, cutting the grain as it comes in between the spikes as the machine progresses; each double spike forming a bearing to resist the straw both below and above the edge of the blades. The crank which moves the blades is connected with the cog wheel on the main axle, which must necessarily cause the vibration of the blades to be in proportion to the speed of the horses, whether that be a walk or trot.

The motion of the machine forward, causes the heads of the grain to fall backwards on to the platform as it is cut; in this manner it accumulates on the platform in a heap leaving the stubble clean. The raker is seated on the main body of the machine with a rake of peculiar construction with which he pushes off the grain in separate heaps for binding. I cannot better describe the manner of using the rake than to say it is like paddling a boat, except instead of putting the paddle into the water, he puts the rake into the grain which has accumulated on the platform, and slides it off in a body behind. It may appear on first consideration, that the bundles could not be distinctly separated while the grain is constantly falling; experience proves that there is no difficulty in this whatever, for the grain under the rake will readily pass from the machine without dragging with it any part of the next bundle. But the operation is still more complete when the rake, instead of being put down on the prostrate grain, is put down a few inches in advance of the cutters into the heads of the grain not yet cut; by this means, the bundle is swept clean off before other grain falls on the rake. The rake is used in this manner to great advantage, in lodged and tangled grain, also when the wind blows strong from behind, by way of assisting the grain on to the platform. Besides the raker, a boy is required to drive, who rides on the shaft horse. As heavy grain is cut as fast as light, the number of bundles will depend on the quantity of grain to the acre, and the speed of driving, say from 4 to 10 binders, as the case may be.

By several years experience, I have been enabled to add much to the durability of the machine, which I apprehend can now receive but little improvement further than I shall make this year. I manufacture machines in Baltimore, and my brother Thomas R. Hussey, will manufacture them in Auburn, N. Y., this year. The machine is warranted to cut 15 acres of the heaviest wheat in a day, and save it much cleaner than is usually done by a good cradler, and to cut the whole season without sharpening. The price at the manufactory is $150. The following certificates are from gentlemen of the highest respectability. OBED HUSSEY.

Baltimore, Md., April 10, 1841.

Certificates.

Last year I purchased a Reaping Machine of Mr. O. Hussey, and it answered my expectation fully; it is very expeditious and saves the grain better than in any other way with which I am acquainted. H. SCHWARTZE.

Baltimore, April 9, 1841.

—

This may certify that I have used a Reaping Machine which I purchased of Mr. Hussey, in Baltimore. I cut my crop with it last harvest, to my entire satisfaction and without the slightest accident or interruption. It cuts clean and rapidly and leaves the grain in perfect order for binding, and is in every respect equal to the recommendation given it by Mr. Hussey, in the American Farmer and other papers. As I found a decided advantage in the use of it myself, I can with confidence recommend it to others; I have not the least doubt that before many years, the cultivators of wheat will find they cannot well do without it. WILLIAM TRIPP.

Easton, Talbot Co., Md., April 6, 1841.

—

Having been applied to by Mr. Hussey, for my opinion of his Reaping Machine, I can freely say that is impossible for me to entertain a higher opinion of any machine than I do of the one which I purchased of him last year. It greatly exceeded my expectations in every respect. Such was the condition of my crop, that I should have sustained material loss without the machine. I cut my heavy lodged wheat with it entirely clean; I could at any time cut as fast as seven men could bind while doing their best. I feel no hesitation in recommending it to every cultivator of wheat, as a great grain saving, as well as labor saving machine.

WILLIAM JESSOP.

Cockeysville, Baltimore Co., Md., April 7, 1841.

Those wishing machines for the coming harvest, should send in their orders as early as possible.

Plan of Barns and Cattle Yards.

Messrs. Editors—I consider it to be of the utmost importance in so cold and variable a climate as this, that all our animals should be well protected from the weather during the cold season, by good warm and comfortable stables and sheds; and not be left to shiver under the lee of a hay-stack, or even a rickety barn. This consideration, together with a request in one of the back volumes of the Cultivator, for plans of improved farm buildings, has induced me to send you a ground plan, together with a perspective view, of mine—not because I think them perfect, but because I think the plan as well or better adapted to the wants of many of the larger farmers in this portion of the country, as any I have seen.

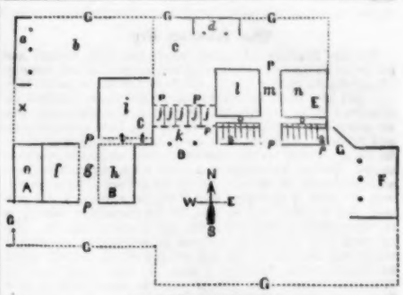
I prefer to have the ground sloping a little to the east, say about one foot in seven or eight, for convenience of digging a basement, which in this plan is of the same size as the barns, B. and C.; under the west end of the barn B. is a cellar for ruta bagas and potatoes, of one third the size of the building, partitioned off by a wall of sixteen inches in thickness, composed of two tiers of brick, with a space of four inches between them, which effectually excludes that enemy of roots—Jack Frost. The remainder of the basement is to be used as a shelter for stock, or a portion may be partitioned off for a cart and wagon house.

Perspective View—(Fig. 49.)

A. is a "lean to" for hay 20 feet by 30. B. is a grain barn 45 feet by 30. C. is a building 33 feet by 20, used for storing hay. D. is a building connecting the two hay barns C. and E. 16 feet posts, the upper part is used for course fodder, &c. the south side of the lower part is an open shed 9 feet wide; the north side is divided into five stalls, each 9 feet by 11, with doors opening into each yard (as seen in the ground plan *j. j.*) which I find very convenient for storing implements, cows to calve in, to keep large stock, &c. &c. E. is a barn 50 feet by 35, in which are stables for stock. I prefer stables, and having the cattle secured by a rope around the horns to stantials, because the animals are more comfortable (which by the way is requisite to their thriving well) than where huddled together, with their necks jammed between 2 unyielding posts, and without room to extend their limbs, to say nothing of the risk of getting besmeared with their ordure (in which they are obliged to lie) if one comes in contact with them. The floors of the stables should slope backwards a little, say about three inches, to cause the liquid manure to run off. I keep my stables well littered with straw, buckwheat haulm, &c. to absorb the liquids, much of which would otherwise be lost.

F. is a building placed on the east side of the yard, and is 35 feet by 20, 16 feet posts, lower part 8 feet high; is used as a shed; the upper part is for storing course fodder, &c. My fences about the yards are 6 feet high, and made of boards very tight, and effectually break the wind, which I consider of nearly as much importance as having sheds.

Explanation of Ground Plan—[Fig. 49.]—*a.* Open shed—*b.* sheep yard—*c.* is a yard for young cattle—*d.* is a shed, they also run under the barn *i.*—*e.* is a "lean to" for hay—*f.* is a bay—*g.* threshing floor—*h.* bay—*i.* barn for hay—*j. j. j. j. j.* stalls for large stock, &c. with doors *p. p.* opening into each yard—*k.* opens shed—*l.* bay—*m.* floor—*n.* bay—*o. o.* passages four feet wide in front of the stables for feeding stock—the two narrow parallel lines represent the feeding trough which is 2½ feet wide, 1 foot deep and raised 8 inches from the floor



Ground Plan—(Fig. 50.)

—the back side is 3½ feet high and made sufficiently strong to *tie* the cattle to—*p.* doors—*s.* stables; there is, you will observe, a door leading from the stables to the floor—*t. t.* passage leading from the threshing floor in barn B. through C. and D. to E. I have windows over each of my great barn doors; also over both the stable doors. At each end of the passage *o. o.* is a bin to contain oats and salt for horses and cattle. There is a watering trough in the basement under the passage *t. t.* to which the cattle in both yards have access. Another in the sheep yard at *x*—G. gates. There are, you will observe, 2 stables wide enough to drive in a span of horses or pair of oxen to bait without unyoking them.

I keep my stock yarded constantly, and disapprove altogether of the plan of permitting them to stroll about the neighborhood where they please, and thus become a nuisance to myself and neighbors, to say nothing of the manure lost thereby.

I have excavated the middle of my yards so that they are of a concave form, being about three feet lower in the middle than at the sides, leaving a margin of about fourteen feet wide that is nearly level, and which is wide enough to fodder upon. I use racks altogether, not choosing to have manure made of my hay before it is eat. To these reservoirs go all the liquids of the yards, and into them every spring and fall, I cart swamp mud, vegetable mold, leached ashes, potato tops, coarse grass, weeds, in short almost every thing of a vegetable nature, (which has no seeds of noxious weeds among it, which will be like to grow. By noxious weeds, I mean *every* useless plant. I think that a *useless* plant requires as much to support it as a *useful one*, and returns nothing therefor—I endeavor to exterminate them all.) These substances I spread about, and generally have enough to cover the yards to the depth of 6 or 8 inches, and during the season repeatedly turn them over with a plow, that they may the more thoroughly become incorporated with the dung of the animals, and they thereby increase in value very much; and, indeed, I find swamp mud is of comparatively little value without undergoing this process which induces fermentation, and fits it to afford that nutriment of which all plants stand in need, in order to form vegetable fibre; thus I make several hundred loads of *choice* manure, to say nothing of my hog dung.

I intend soon to connect my hog pen with my barn yard in such a manner that the hogs may have the run of the yard, and perform the labor of turning over the manure, and thus save me the trouble; a labor which I doubt not they will willingly perform, as they are a very accommodating animal, always being willing to do just as you wish to have them, provided you wish to have them do just as they have a mind to.

I have got to the bottom of my sheet without giving you a description of my hog pen, and management of my stock, which I intended to do, but may still at a future occasion should this meet your approbation.

One word more and I have done. In your last I noticed a communication from Solon Robinson on the subject of an "American Society of Agriculture." In my estimation it is the best thing that can be done to promote the cause; and he shall have at least *one* ardent co-operator in this state; a state which needs the benefits to be derived from such a society as much as any other, for we are truly in the dark with respect to the improved modes of cultivating the soil, as well as other subjects relating to improved husbandry.

I think that barns and other out-buildings, look enough better for a coat of whitewash to pay the cost; all mine have received it. Directions for making an excellent kind are to be found in the fifth volume of the Cultivator.

The above, such as it is, is at your disposal.

Yours truly, J. F. L.

West Windsor, Vt. Feb. 1841.

To Preserve Hams from Flies, &c.

For a score of hams, take about 3 quarts of salt, 1 pint of molasses, ¼th of a pound of black pepper, and 2 ounces of salt pe re pulverized; mix well together; lay the hams on a table with the rind downwards; rub the mixture over them with the hand, taking care to apply it to every part where there is no rind; let them lay a week, and rub them over with clear salt, which continue once a week for four or six weeks, according to the size of the hams, and they are ready to smoke; or if you choose after the mixture is sufficiently struck in, put them into brine for two or three weeks and smoke; when smoked, hang them in a dry place. We hang ours in the garret where they will keep all summer, secure from flies. When a ham is cut for use, hang it or lay it where you please, the flies will not touch it. We have practiced this method for several years, and have no reason to abandon it.

We have fed our milch cows about a peck of carrots per day each, through the winter; and the butter is as yellow as that made in summer, and equally as good.

Great improvements have been made in swine in this section by the introduction of the Berkshires. We fatted 12 pigs last fall, (about nine months old when killed) average weight 200 pounds. Their food was one bushel of beets to two bushels of potatoes, cooked in a cauldron kettle and meal mixed in—the right kind of food for hogs, now-a-days.

D. G. MOSHER.

Springport, Cayuga Co. N. Y., 3d mo. 1841.

To Cure Scratches on a Horse.—Wash the legs with warm strong soap suds, and then with beef brine. Two applications will cure the worst case

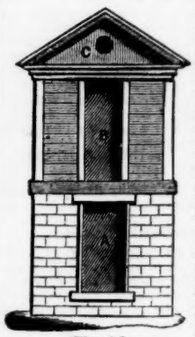
The Hessian Fly.

MESSRS. EDITORS—Although much has been written and published in the different agricultural journals of our country, respecting the natural history and habits of the so called Hessian fly; and more particularly as to the mode which it instinctively takes to propagate its species, this seems yet to be an unsettled and disputable point among both entomologists and farmers. I profess to be but a humble member of the latter class, making no pretensions to rank amid the scientific corps. Having some time ago made some observations, and an experiment, not so fully carried out as I could have wished, with the view of satisfying *myself* on the subject, I will proceed now to detail them to you, for the purpose of casting in my mite towards elucidating this much vexed question. Many years past, perhaps as far back as twenty-five, a species of wheat was introduced into this section of our country called and known as the "Lawler wheat," it was, I believe, at the time, said to have been first propagated somewhere in your State, and brought thence into Pennsylvania, by a traveling Methodist minister in his saddle bags, (whence it was sometimes called the saddle-bags wheat;) from the latter State it gradually found its way into Delaware, Maryland, &c. Like most farmers in this part of the State, about twenty years ago, (I was then a green one,) I procured some of this said Lawler wheat for seed, principally because it was then recommended as possessing the power or faculty of resisting, or recovering from the attack of the Hessian fly, better than any other species of the plant heretofore known among us. Owing to this supposed quality, I commenced sowing it on the 19th of September, being some twenty to twenty-five days earlier than my usual time; by the second week of October, the first sown wheat being well up, and having generally put forth its second and third blades, I resorted to my field to endeavor to satisfy myself by occular demonstration, if I could do so, whether the fly did deposit the egg on the blades of the growing plant, having seen it then lately asserted, by a Virginia writer on the subject, that such was the fact. Selecting what I deemed a favorable spot to make my observation, I placed myself in position, by reclining in a furrow between two wheat lands. It was a fine, warm, calm, genial forenoon; and I had been on the watch but a minute or two, before I discovered a number of small black flies, alighting and setting on the wheat plants around me; and so strong seemed to be their predilection for the wheat, that I did not observe a single fly to settle on any grass, or other thing within my view, but the wheat. I could distinctly see their bodies in motion when settled on the leaves or blades of the wheat, and presently one alighted and settled on the *ridged* surface of a blade of a plant completely within my reach and distinct observation. She immediately commenced disburdening her apparently well stored abdomen, by depositing her eggs in the longitudinal cavity between the little ridges of the blade. I could distinctly see the eggs ejected from a kind of tube or sting, or by the elongation of the body; the action of the insect in making the deposit, being similar to that of the wasp in stinging. After she had deposited, as I supposed, some eight or ten eggs, I easily caught her upon the blade, between my finger and thumb, not giving her time to complete her operation, lest she might escape me; having sufficiently wounded, I wrapped her up in a piece of paper, and put her securely in my waistcoat pocket. I then proceeded to take up the plant, on the blade of which I saw the eggs deposited; which I did, with as much as I conveniently could of the circumjacent earth, and wrapped it all securely up in a piece of newspaper. After that, I continued my observations on the flies, caught several similarly occupied, and could see the eggs uniformly placed in the longitudinal cavities of the blades of the wheat; their appearance being that of minute reddish specks. My own mind being thus completely and fully satisfied as to the mode in which the egg was deposited, I proceeded directly from the field to my dwelling, and having procured a large glass tumbler, put the plant with the eggs upon it in the tumbler, added a little water to the earth, and immediately secured the aperture of the vessel, by covering it so securely with paper that no insect could get access to the interior. The paper was sufficiently perforated with pin holes for the admission of air, &c. The tumbler with its contents thus secured, was placed in a south window of my dining room, and daily and anxiously watched by myself, to endeavor to discover the hatching of the eggs. Being but little about the house, however, I was disappointed in my wishes in this respect, until coming in about the middle of the fifteenth day from the time of the deposit of the eggs, I was so fortunate as to discover a very small maggot or worm, of a reddish cast, making its way with considerable activity down the blade, and saw it till it disappeared between the blade and stem of the plant. This, I have no doubt was the produce of one of the eggs, and would I presume have hatched out much sooner, had the plant remained in the field in its natural position. It was my intention to have carried out the experiment, by endeavoring to hatch out the insect from the flax seed state of the larvæ, into the perfect fly again; but being called from home, the plant was suffered to perish, and thus terminated my experiment and observations in this instance. That the insects I saw making their deposit in the wheat plants in the field, were the real so called Hessian flies, I had no doubt at the time, nor have I since had any reason to change that opinion. The fly that I caught on the blade of the wheat as above stated, I enclosed in a letter to Mr. John S. Skinner, the then, as now, Editor of the American Farmer of Baltimore, who, having examined it, as well as I now recollect with a microscope, pronounced it to be a genuine Hessian fly, and identical in appearance with others then recently received from Virginia. I have not the American Farmer by me, and cannot therefore refer more particularly to Mr. Skinner's article on the subject. I have not myself, for, say the last twenty years, had the least doubt that the Hessian fly deposits its eggs on the blades of the growing wheat principally; that in a few days, how many I don't pretend to determine, the egg hatches into a worm, which descends to its resting place between the blade and stem of the plant, where it is to be found in the maggot state, in which it does the principal, if not the only injury to the plant, by extracting and feeding on its juices; thence it changes into the flax seed, or dormant state, and thence hatches out into the perfect fly. And I further believe that this most destructive little insect does not always confine itself to the wheat alone, but occasionally resorts to other plants somewhat similarly constituted, on which to deposit its eggs. I well recollect, that many years ago, while examining a species of grass growing luxuriantly in the yard of the dwelling house at Swan Point, in Kent County, I discovered therein a number of the larvæ of an insect, which I then thought, and still believe, were those of the Hessian fly in the flax seed state. That grass had leaves or blades with a ridged surface, similar to the wheat plant. There is another insect which probably does more injury to our growing wheat, than is generally apprehended; the larvæ of this, may sometimes be found in the spring of the year, in the center of the main stem of the plant, in the shape of a small worm. It was once shown to me, about the first of May, 1820, in plants taken from my wheat crop here, by the late Dr. Ewnalls Marün, of Easton, Talbot County; but he wholly repudiated the idea of its having any connection with the Hessian fly; he called it, I think, the budworm. It is my belief that the eggs of the Hessian flies, deposited in the fall, remain in the torpid flax seed state during the winter, and hatch out thence during the first apparently warm weather in the succeeding spring. I have frequently had many of them alight on my clothes, while passing about the farm in the months of March and April. I have thus, MESSRS. Editors, given you my observations and crude notions on this, to farmers at least, most interesting subject; and in doing so, have extended my letter to much greater length than I had any idea of doing when I first took up my pen to write to you. Should you however, deem the communication worthy of a place in the columns of the Cultivator, I shall not regret the time or trouble it has given me to make it, as perhaps it will lead others much more capable than I pretend to be, to make more minute investigations on this most important subject, and give the result of their observations and experiments to the agriculturists of our country, through the medium of your most interesting and useful journal.

Yours truly,
EDWARD TILGHMAN.

White House, Queen Anns County, E. S. Maryland.

Ash House and Smokery.



[Fig. 51]

MESSRS. EDITORS—Having the season past had occasion to erect a dwelling-house, together with carriage-house, woodhouse and other out buildings, I have endeavored to make what I considered some little improvement in their construction, and adaptation to use. I herewith send you a rough draught or sketch of my ash and smoke-house. The ground plan is 7½ by 5½ feet; the lower part, or ash-house, built of thin quarry stone, the edges dressed to a line with the stone hammer and laid in lime mortar; the walls 6 feet high. The upper part, or smoke chamber, of wood; the sills six inches square, and secured with iron anchors incorporated into the walls below, to prevent injury from wind. Sleepers or joists, 6 inches deep, are framed across the sills, and a tight, rough floor laid; the sides planked with seasoned hemlock 1¼ inches thick, the edges made to fit close, and clapboarded outside. The floor to ash-house stone; the ceiling lathed and plastered, so as to be nearly fire proof; four tin tubes introduced through the floor of the smoke chamber and ceiling of the ash-house below, serve to supply the chamber with smoke. We build the fire in the ash vault, which is nearly air tight; a small supply of fuel is sufficient to supply the smoke chamber with smoke for some length of time. By this method we avoid the danger of over heating during the process of smoking, (occasioned frequently by carelessness in the fire builder,) which, in some cases, proves ruinous to the ham, for summer use; the danger of firing the building is greatly diminished. The labor and hard work of reaching to and fro in putting up and taking down the hams or other meats, is greatly lessened, as we can at all times have a clean floor to stand upon during the process. The hams are kept clean, and free from dust, ashes, &c. Should they be allowed to remain through the warm season, by closing the ventilators, are secure from flies and other insects. The chamber being dry, an occasional fire in the ash vault will prevent them from moulding.

A. door to ash vault—B. door to smoke chamber—C. ventilator which should be in each gable end. CURTIS MOSES.

Marcellus, N. Y., March 15, 1841.

Suggestions to the State Agricultural Society.

ESTEEMED FRIENDS—I perceive in your last paper, a criticism by *Holkham*, on a communication of mine, (inserted in the 7th volume of the Cultivator, page 197,) in which he charges me with gross blunders and palpable contradictions. Since reading his remarks, I have reperused my letter, and am free to confess that it is wanting in that perspicuity which ought to characterize the writings of all who assume to instruct the public. On that account the rebuke is merited, and should I hereafter write any thing for your columns, I will endeavor to be more careful in this respect. As a *partial* excuse, however, I would observe that the paper in question was not intended to teach agricultural chemistry, but to show how much would be gained by farmers if scientific knowledge was superadded to their practical skill; and it was my intention to have followed up this with another, in which the facts and reasonings contained in it, would have been applied to establish the necessity of an *agricultural school*; but as I saw from your notices to correspondents, that your columns were overburthened, I forebore to send it.

If Holkham will carefully reperuse my letter, I think he will find that he was wrong in charging me with self contradiction. I stated that the sulphate, as well as the soluble salts of iron, are injurious to those soils in the composition of which lime is *not* an ingredient. This I reassert to be true. A simple and obvious experiment will satisfy Holkham of its correctness. But sulphate of iron may become *useful* on *calcareous* soils, because, as soon as it is incorporated with the soil, it ceases to be sulphate of iron; the sulphuric acid quits its combination with the iron, and unites with the lime in the soil, forming sulphate of lime or plaster of Paris. Dissolve lime in some water and sulphate of iron also, pour the solutions together, and a buff colored precipitate will fall down. Let this be analyzed, and it will be found to consist of oxide of iron and gypsum. Surely there is nothing contradictory in this, nor is it, as Holkham erroneously supposes, purely a theoretical statement; it is as much a fact as that 2 and 2 make 4; it is as fully susceptible of demonstration as that 3 from 6 leaves 3. Again, your correspondent does not believe that dung can by decomposition, unite with the oxide of iron so as to form a sulphate. If he is not familiar with chemistry himself, I am not surprised that he refuses to take the word of an anonymous writer for it. But it would occupy too much space in your columns, to describe all the experiments which are necessary to prove it. The better way would be for him to consult some able chemist in whom he can confide, and my word for it, he will be told that my statement is correct.

My principal object in writing at this time, is to propose a plan for giving increased interest to the meetings of the State Agricultural Society, which I had intended to have laid before it at the last annual meeting, had I not been providentially prevented from attending it. It is admitted on all hands, by the enemies, as well as the friends of book farming, that farmers want FACTS. Scarcely any thing is settled in agriculture. Farmers are not agreed as to the best time for sowing plaster, nor on the soils to which it is applicable. It is not certain whether it is better to plow under a crop of clover in a green or a dry state, nor whether whole or cut potatoes are best for planting. We cannot tell whether a load of horse manure is better or worse than an equal quantity of cow manure; and it is still a matter of dispute whether we ought to plow our manure under, or spread it on the surface. There are plenty of experiments on record, with regard to all these subjects, but the misfortune is, that no two of these have been conducted alike. The results of them differ as widely as the poles; and as the collateral circumstances are not stated, we cannot detect the source of the fallacy. Now it appears to me that the State Society might settle these vexed questions conclusively and satisfactorily by the adoption of a plan something like the following. Let the executive committee convene some time before the annual meeting, and select a list of subjects for experimental investigation; in order to ensure uniformity, and to enable the Society to compare the results with each other, let them frame accurate and minute instructions under each head of inquiry to be rigidly observed by each member of the experimental committee. Suppose one of the subjects selected is "the comparative value of horse and cow manures." As latitude, or rather climate, will probably have some influence on the result, it will be necessary for the report to state the name of the county and town where the experiment is made, and if practicable, its elevation above tide water. The aspect of the land, whether north or south, ought also to be stated. Soils will also influence the result; hence each experimenter should make the trial on 4 different soils, viz: clay, sand, loam and gravel. To facilitate comparison, equal quantities of each kind of soil should be staked off, say 2 square rods on each of the 4 kinds of soils. Let equal quantities of manure be placed on each square, say 4 bushels of horse manure on the one, and 4 bushels of cow manure on the other. When the grass is fully ripe, let all the squares be cut as nearly as possible, at the same time; and when it is dry, let the hay on each square be carefully weighed; the difference in the weights of the two squares will give the relative value of the two manures on the 4 soils respectively. The committee should consist of at least one from each county in the State. It is obvious that these reports, arranged in a tabular form, would be very valuable. Suppose on the sandy meadow, the square which was manured with cow manure, yielded 40 lbs. of hay, and that with horse manure yielded 80 lbs., then by a simple statement in the rule of three, a farmer can accurately determine which of the two kinds he can most profitably purchase for a sandy meadow; suppose the price of horse manure is 50 cents, then 30:40::50c. :66; hence he determines that cow manure at 66 cts. per load, would be as cheap to him as horse manure at 50 cents. Many other obvious results would follow from these experiments, interesting alike to the farmer, the statesman and the political economist.

Though the above experiments would only give the comparative value of the two manures as applied to grass, yet the same committee might be charged the next year with similar experiments in relation to potatoes, and the next in relation to corn, and so on, until their respective values for all crops were fully ascertained. The meetings of the Society, as at present conducted, are not very interesting to farmers; to be sure there is an interesting address from the President, and valuable reports from the committees, but these can be as well read in the Cultivator, by his own fire side. To be sure, the great magnates of the profession are there, but the farmer is unacquainted in Albany, and has no one to introduce him to them; hence he derives no pleasure from their society. There was no living man with whom I was so desirous of becoming personally acquainted, as with the late Jesse Buel, but as I was not acquainted in Albany, I could not be introduced to him, and hence I forever lost the pleasure and advantage of his acquaintance; but this is a digression. The truth is, that when a farmer attends the meeting of the Society, he has nothing to *do* and nothing to *see*; hence he feels like a blank, and does not care to repeat his attendance. This in my opinion is the grand cause of the apathy which is manifested by our brethren in the prosperity of the State Society. But if the proposed plan is adapted, this apathy will, I verily believe, be succeeded by eager interest. If carried out, it will give ample employment to *all* the members, each one will have his appropriate business to perform, his own report to make; he will feel anxious to hear the measure of commendation which is bestowed on his labors; he will feel a proper and consoling sense of his own individual importance in the body, and hence will be anxious to attend its meetings.

If the plan should work as well as I suppose it will, it might be a means of inducing the farmers of our country to establish a National Society on similar principles; and as this is such a favorite object with our friends GARNETT and ROBINSON, perhaps they will raise their "trumpet" tones to give the scheme a fair trial. Much more might, and perhaps ought to be said on the subject, but as your columns are crowded, I will not trespass upon them longer. Perhaps if you approve the plan, you will yourselves fill up my omissions. Very respectfully,

Stockport, 3 mo. 5, 1841. N. N. D.

Planting in Drills.

MESSRS. GAYLORD & TUCKER—In the November No. of 1840, page 167, last column, of the Cultivator, is a description of the cultivation of the sugar beet, exactly corresponding with my practice, except the manner of planting the seed. The writer above referred to, draws a line with marks on it at intervals on the ridge, thus denoting the place of planting, &c. In place of a line, I have constructed a wheel as follows: The cogs on the

[*Marking Roller—Fig. 52*]

surface . made 2 inches long and 1 inch in diameter at the base and 8 inches apart; the wheel of any circumference you please; the larger the circumference, the better it will work. With this wheel, a man may, after the ridge is prepared, mark out the ground as fast as he can walk: small children may drop the seeds in the holes thus made, followed by another person with a small hand roller, as fast as he can walk, covering the seed, and the work is accomplished. I consider passing over the ridge with the hand roller very important. It presses and pulverizes the earth around the seed nicely, and causes it to vegetate quickly and with more certainty. I have an excellent variety of Indian corn, and shall seek an opportunity of sending you a few ears. Respectfully yours. C. OSBORN.

Westfield, N. J., Feb. 16, 1841.

Cultivate your head and your heart as well as your fields

Farm Report.

Messrs. Gaylord & Tucker—I furnish for the Cultivator the following account of the crops raised on my farm, and manner of cultivation. I do not make the statement because I think that I have outdone others, for I do not doubt that many, very many, have done much better than I have. My object has not been to raise a large crop at great expense, to boast of; but to pursue a regular system of permanent improvement, which should not only render the land each year more productive, but should pay for all improvements, and return a moderate profit. In this I have succeeded; my farm is annually becoming more fertile, and is cultivated with less labor and expense.*

My farm contains 140 acres, 30 of which is wood land, 3 in highway, and the last year 24 in mowing, 15 in summer fallow, 15 in pasture, and about 53½ in tillage crops. The cultivated part is divided into fields, which average about 10 acres each, by fences of chestnut rails laid up in what is called Virginia or worm fence, occupying about 7 feet in width.

Wheat.—On 24 acres I raised 625 bushels. The field was occupied by pasturage in 1839. In June it was broken up, harrowed in July, and cross plowed in August, by laying it in beds about 24 feet in width by back furrowing. The first ten days of September it was sown with a trifle more than 1½ bushels of wheat per acre, harrowed thoroughly lengthwise of the beds, then rolled down with a heavy roller, and the furrows between the beds opened with a plow. In the spring of 1840, a quantity of clover seed in the chaff, sufficient to seed it well, was sown.

Corn.—In the spring of 1840, I planted 10 acres with corn, on land that the year previous had borne wheat, (one acre excepted which bore corn,) 7 acres were covered with wheat straw, 2 with barn-yard manure, and one acre received no manure. The straw was turned under by one good plowing, the land was then made fine and mellow by harrowing, and planted between the 8th and 24th of May with corn, in hills 3½ feet apart each way. It was twice hoed, after having had the cultivator run through it twice each way. The product was 634 bushels.

Potatoes.—I planted six acres of potatoes, which were manured and cultivated much in the same way as the corn, and produced 1400 bushels.

Barley.—With one plowing, two harrowings, and one rolling, I sowed 4 acres of barley, on corn stubble, which produced 160 bushels.

Peas.—A piece of land containing 5¼ acres, which in 1839 was mown, early in the spring of 1840 received one plowing, then was rolled, sown with peas, harrowed thoroughly and rolled again, produced 166 bushels. After the peas came off, I gave this piece one more plowing, harrowing, and rolling, and sowed wheat, which at the setting in of winter looked well.

Oats.—Three acres of corn stubble were sown with oats, after one plowing, harrowing, and rolling. The oats lodged some, and the whole piece suffered very much from the grasshoppers. Produce 125 bushels.

Carrots.—Three-fourths of an acre was planted with carrots, on corn stubble, after two plowings and two harrowings; rows about two feet apart. Produce 500 bushels.

Sugar Beet.—Half an acre of ground, like the above, received similar treatment, and was planted with sugar beet. Produce 300 bushels. The beets and carrots were hoed twice.

Hay.—I mowed 24 acres, which yielded at least two tons per acre, or 48 tons. Since I have pursued a rotation of crops, I have never had occasion to complain of light grasses. Fifteen acres have been summer fallowed, and sown with wheat the same as in 1839.

The stock which has been pastured on the farm the past summer, consists of three cows and one heifer, three horses, twenty-five hogs, (and through the latter part of the summer and fall 15 pigs,) and 225 sheep.

Seeding Lands.—My method of seeding lands to grass, is to sow five quarts of clover seed, and the same quantity of timothy seed per acre on wheat, on some of the last snows of March: or if on spring grain, I use the same quantity of seeds, harrow them in lightly, and make all smooth with the roller. When the grass seed is up, sow two bushels of gypsum per acre. If it is intended for pasturage, sow the same quantity of gypsum the second season; but if it is intended for mowing, omit the second use of gypsum, as it causes the growth to be too great, makes bad mowing and poor hay, because clover when lodged soon becomes moldy and rotten. Since I have followed the practice of sowing gypsum after grass seeds, I have found no difficulty in their vegetating well and living through the summer. I think it assists the young plants to withstand the drouth. I would advise every farmer to pursue a rotation of crops; plow, mow, and pasture each field in its turn. If you have fields which are so wet as to prevent this, make them dry by judicious draining. Ample directions for this may be found in the former volumes of the Cultivator, and in no other way can capital be more profitably employed on a wet farm.

Keep a crop of some kind at all times growing on your fields; if you have no grain or roots on them, be sure to have a good quantity of grass there. To this end sow grass seed, and especially clover, often and plentifully. The opportunity of making thousands of dollars annually, is lost to our farmers by failing to sow clover. The fields, which a few dollars worth of clover seed would cover with a luxuriant crop of grass, to fatten the cattle and fertilize the earth, are for the want of such seeding, often seen a barren waste, or what is still worse, a vast receptacle of thistles, daisy and johnswort, from which the adjacent fields receive a large supply of these noxious seeds. One thing more respecting the management of my own farm, and I close. No intoxicating drinks of any kind are used upon my farm; neither is any thing raised upon it, allowed to be converted into such drinks, and this course I would respectfully recommend to my brother farmers.

Navarino, Onondaga Co. February, 1841. E. MARKS.

* It is for the reasons here stated by Mr. M that we take a pleasure in laying such papers before our readers. They are the results obtained by a practical, intelligent, reading farmer; such as any well informed, persevering, cultivator may obtain. There has been no extraordinary effort for an extraordinary effect; but what has been done is the result of system, and therefore permanent. Such examples are far more valuable to the great mass of farmers, than those in which much extra capital has been expended, or means adopted not within the power of all.—Eds. Cult.

Herefords vs. Short Horns.

Messrs. Gaylord & Tucker—I have read with much amusement the highly facetious letter of Mr. Henry S Randall, in your last Cultivator, and laughed at its contents, almost as much as he says "the impudent yankees" did at my steeds and pigs. My mirth, however, was mingled with a feeling of regret, that I had incurred his wrath, and that his good sense, (of which I had previously a high opinion) had allowed him to stoop to ridicule and ribaldry, as a "dernier resort;" certain signs of a weak argument.

I know nothing of his friend "Mr. Ezekiel Peabody," and therefore give Mr. R. all the credit he can gain by his acquaintance; and I leave all such passages, dictated as they are, by any thing but *good breeding* and gentlemanly discretion, to pass for what they are worth; which I think will be very little, less even than the shadow of one of the Kilkenny cats, so wittily served up in the "Olla Podrida," with which we are regaled. Such insinuations are unworthy of Mr. R., and are beneath my notice. I will merely answer those parts of his letter which appear business like.

In the first place, I am aware I spoke highly and confidently, regarding my purchases; but it was not bravado. I knew the prejudices I had to contend against, *the true worth of my animals*, and was willing to back my own opinion. I see by your last paper that I have raised up opponents who will throw out every obstacle against me, but "*Truth is mighty and will prevail*," and they shall not drive me from my purpose.

I did not intend to say any thing regarding the judges at Niblo's Fair, but only wished for an opportunity to test their judgment. Mr. R.'s article has given it to me. I will show "Matchless" against any cow in the U. States, of any breed, as the most valuable animal, for a cup of the same value as was there given, adding the expenses of the judges, who shall be selected in the following manner:—I will name mine, my opponent his, these two selecting the third; and to prove that I am not actuated by any exclusive feeling, I will show a three year old Durham heifer lately imported, against the one produced by my opponent, whether winner or loser, on the same terms. I will also shew a Berkshire boar and sow now in the possession of Mr. John Thomas of Albany, nine months old, which were a part of the identical stock so cruelly "*laughed at*," against any thing in this State, of the same breed, excepting Mr. Allen's herd of Buffalo, (as I think him the best judge to decide,) for a prize similar to the one given by the Institute. I will go still further; Mr. Clift has the two ewes shown at the fair, now in his possession, and I presume both have lived together, and fared alike since then; if so, they shall be exhibited at Mr. C.'s farm; I will accompany Mr. R. there, who shall be the judge without knowing to whom either originally belonged; and I will venture a similar cup to the one Mr. C. gained on his decision.

As regards the milking dispute, I shall not go beyond the proposition I have made, but am ready to fulfil that "*in earnest*." My cow shall be a pure Hereford, but I could not agree to forfeit if not in my possession; she shall be one of the "24" I imported last summer. It is not my wish to make any sort of a gambling contest of this business, but to give an excellent breed of cattle a chance of being appreciated as they ought to be, and to silence their traducers; and I refer the public to Mr. R.'s various epistles, to say whether or not they have made it incumbent on me so to do, or whether I had any alternative but to reply or submit in silence, to his injurious misrepresentations. Should my offers be taken, and the triumph be mine, I shall value the prizes as mementos worth preserving; should I fail, a second trial may be more successful, as I am resolved on perseverance.

Mr. Randall says I have "seduced' himself and others into this controversy; let him refer back to the Cultivator, if his memory fails, he will soon see who commenced it, and I will leave it to your readers to say, which of us has most violated that amenity of feeling, which ought always to accompany us, however eager we may be to impress our own opinions on the minds of others, or controvert those of our opponents. I ask Mr. R. what accusation can be more opprobrious, than that of "*stealing?*" And has not Mr. Hepburn endeavored to fix this charge on the breeders of our cattle? I also again ask him to cross his pure Berkshires with the "Landpike" he speaks of, exhibit the produce to *proper judges*, with *his* certificate of pedigree and purity, and if he is not detected by them, the said produce and his own conscience, he may then venture on the "Alligator;" and I will believe that "*stolen*" crosses *may* be concealed. I say now, what I have said before, that a cross with the Hereford and Durham, is an excellent one; probably better than the pure breed of either, but cannot be brought under the observation of a *judge* without immediate detection.

I must now call your attention to Mr. Youatt's text book, to which Mr. Randall and Mr. Hepburn seem to have pinned their faith with an obstinacy, which regards any thing that may differ in the smallest degree with its dogmas, as an innovation and a heresy not to be tolerated. Mr. Youatt is unquestionably a man of great talent and judgment; he however is but a man, and is liable to error like others; while therefore his opinions have all the weight which they so justly deserve, with practical men in his own country, these men do not, like Messrs. Randall and Hepburn, make an agricultural Pope of him, or consider his book (excellent though it be) as the agricultural gospel. Science and improvement are too much on the advance to rest long on any particular point; but to return to the text book. In the 11th page he says, speaking of Devons: "They have been long celebrated for a breed of cattle beautiful in the *highest degree*; and in *activity* at work and *aptness to fatten, unrivaled*." In speaking of the Herefords, page 32, he says—"They are even more kindly feeders than the Devons, *and will live and grow fat, where a Devon will scarcely live*." And further in the same page—"The Devons will acquire bulk and hardihood, *and the Herefords a finer form and activity*." These are his exact words. Gentlemen reflect on these conflicting statements and reconcile these contradictions if you can. When Mr. R.'s classical knowledge, backed by Mr. H.'s "*intelligence*," have shed their light on them and converted such language into reason and proof, I shall then believe there is real and sound advantage in studying the classics; but till then, I shall be content to make my quotations in humble dog latin; to "gallus meus ego et nunquam animus," notwithstanding Mr. R.'s terrific range of literary acquirements, from the "Kilkenny cats" and his friend 'Penbody' to Galileo and Copernicus," his highly sportive and illuminating prose, his poetic taste, and "*slaughtering*" satire; but enough of this. I will turn to another attack. When I sent you the "Earl's Letter" for publication, I did not expect my motives to be impugned, or my character calumniated by an illiberal suspicion; my object was to show that men of the highest rank in England, know the value of good stock, equally well as the practical breeder; and the advantages to be derived from a *careful selection*; the letter was a "*genuine*" off hand, business like communication, in which forms and phrases were evidently less thought of, than the sound information conveyed in it; and I very much regret it did not please the fastidious taste of your several correspondents; doubtless some of them thought that an "Earl" should convey his information on the science of breeding cattle, in a most *labored* and elegant pastoral composition. For the criticisms on myself, I care not; I write with a view only of promoting the farmer's welfare and the cause of truth; I am not so easily pulled down therefore, by an error in etymology and syntax. I have taken my stand and purpose to maintain it. Now Messrs. Editors I shall be very much obliged if you would tell me the names of your private correspondents, or publish their communications, so that I may distinguish my friends from my enemies.

I send you a letter from Mr. Turner, Court of Noke, Herefordshire, a gentleman well known in the agricultural world, so that you may again state you have seen the "*original*" from which my extracts below are taken:

"It is a well known fact, that there is no other breed that can compete with the Herefords as regards a *profitable stock*; for instance, the memorable old Mr. Westcar, the Buckinghamshire grazier, at the dinner of the Christmas cattle show, some years ago, when the first prize in the first class was awarded to a Durham ox, the owner in the heat of the moment, rose and offered to bet a wager that he won the same prize the following year with an ox of the same breed. Mr. W. silenced him with this public challenge. He would go to the next October fair at Hereford and purchase one hundred oxen of the Hereford breed, which he would feed and show against the same number of all the breeds in England, for one hundred guineas per head, or two thousand guineas, which offer no one dare accept." This was done to show the rich men who then possessed the Durhams, that he was ready to support the Herefords with his purse. "He then told the company that during his experience as a grazier, *he had fed and sold twenty Herefordshire oxen to the butcher, at an average of one hundred guineas each, and he would defy all the breeders of Short Horns, to say they had done the like.* As regards my own breed of Herefords, I can boast of having bred the last ox sold to the slaughterer for one hundred pounds, which was in 1827; since that, several steers under four years old, from sixty to seventy. I have much pleasure in saying my herd has not degenerated, as will appear by the show at Hereford last week; all the prize cattle were either bred by, or descended from bulls of my own breed. Mr. Perry purchased the 'Goldfinder' of me when a yearling.

"As regards the Hereford breed for dairy purposes, I can speak from experience, that when well kept few will answer better. I can give an instance of a prime cow of my father's producing *thirteen pounds of butter per week, when allowed hay and cabbages, the whole of the winter*; but the principle of the Herefords being the stock, little attention is paid to the dairy. We all know to keep up cows to their milk, requires the most nutricious food, which is seldom allowed to cows in this country. We have experienced a very severe winter, and the epidemic so prevalent I fear good stock will not be very plentiful this spring; the present prices are very satisfactory to the breeder. The fair at Hereford was very pleasing to do business at, a complete clearance of all the good stock, particularly the bulls, of which there was a most splendid exhibition."

I now conclude with one remark for the satisfaction of Mr. R. that "Matchless" was bred by Mr. Turner, purchased by Mr. Hewer for Mr. James Walker; and the only reason I altered her name was, I had one named "Spot" in my first importation. I will give my views on sheep breeding at some future period. I think nothing is a better test for profitable animals, than those that get the greatest weight of animal food with the least weight of vegetable.

WM. H.'Y SOTHAM.

Perch Lake Farm, April, 1841.

Experiments in the Culture of Corn.

Messrs. Editors—In the spring of 1839, I turned over a clover sod of two years standing, as early as it would admit of plowing. The first week in May I planted one half the field to potatoes, and after planting my corn, I plowed the other part of my potato patch three times more, dragging between each successive plowing, and planted the potatoes the last week in May, the ground being in first rate order for any crop, as judged by the workmen. After this, each piece received like treatment. I would here observe, that I plant my potatoes a little below the level of the surface, and cover some deeper than is required for corn; while the potatoes show like rabbit's ears, I hoe for the first time, and second and last, before the vines fall. The result of the operation was decidedly in favor of the once plowing. I would here remark that my corn was planted on once plowing, rolled down, dragged fine, planted on a level surface, plaster and ashes, (two parts ashes and one plaster) put on before hoeing, hoed three times; not much hill made. The result was an extraordinary crop, to the astonishment of most that saw it.

In 1840, I had about thirty acres for corn—previous crop wheat on summer fallow. I let neighbor P. have three acres, (not the choice of the field but a grade the poorest,) that he fitted for himself by twice plowing; planted about four feet apart, plowed very deep between the corn, and hoed twice. The result was about thirty bushels per acre. Neighbor W. had five acres, plowed once and ridged; planted four feet apart; hoed three times; a heavy hill made around the corn. The result about forty bushels per acre. The remainder of the field plowed once; dragged fine, and planted on the surface. Six acres being planted from three and a half to four feet apart, yielded fifty bushels per acre. Nine acres, planted three feet apart; hoed twice and weeds cut down the third time; not much hill. The result from sixty-five to seventy bushels per acre. The remainder of the field yielded from fifty to sixty-five bushels per acre. A Subscriber.

Camillus, Onondaga Co. N. Y.

Cooking-Stove Ovens, often burn the bread, by the plate getting too hot; spread a layer of clean ashes over the iron and it will prevent it. This is much better than putting in bricks; bricks cause the plate to burn out, ashes preserve it.

Weight of the Berkshires.

MESSRS. EDITORS—In the April number of the Cultivator just at hand, I noticed the great weight of a lot of swine, a cross of the Berkshire on the Mackay, lately slaughtered by Mr. Phinney, of Massachusetts; as also the weight of pure Berkshires bred by the Shakers of New Hampshire, which go to show, that when great size is wanted, it can be had from this very popular breed as well as another. In a late letter from MUNSON BEACH, Esq., a distinguished and spirited breeder of various kinds of improved and domestic animals, in Lebanon, Ohio, I have the results of the crosses of the smallest prick ear Berkshire males, on the common hog of Warren County:

"Mr. Samuel Irons who resides in this county, has stood pre-eminent for twenty years as a breeder of fine hogs; he denied the further improvement of his breed by crosses with the Berkshires. His son, however, having procured a short fine boar of me, prevailed on the father to send a sow to him. He did so, but selected one of his poorest, evidently with the design of *disgracing* the produce, when it came to be reared with his own favorite breed. The sow had nine pigs, two of the best of which were sold away for breeders, the other seven at twenty months old, averaged nett 435 lbs., while his own hogs six weeks older, and fed precisely as the cross of Berkshires were, averaged only 333 lbs. nett, being less than the former 102 lbs., or more than one-fourth less, upon at least an equal, if not a greater consumption of food. Mr. Ebenezer Hathaway slaughtered a lot of ten half Berkshires at twenty months old, that averaged nett 373½ lbs.; and Mr. H. gives it as his opinion, that it cost him no more food, care, or attention, to get that weight, than it would have done with the common hogs he formerly had, to have grown 250 lbs. on an average nett. Messrs. Steddom and son had a lot of forty half to three-fourths bred Berkshires, which at sixteen to eighteen months old, averaged nett 350 lbs.; and these were the culls and runts, all *the choice* pigs having been sold for breeders. This lot of hogs was only grass fed during the summer months. Mr. Tache of Springboro, lately slaughtered a half Berkshire, gross weight 900 lbs. nett 814 lbs.! Sufficient other instances of great weight, could be produced of the crosses of the Berkshires, to convince the most sceptical of their size, early maturity, facility and easiness of keep, were it necessary."

Mr. MICHAEL L. SULLIVANT, of Columbus, Ohio, informs me that though possessing the best breed of large white hogs to be found in the State, probably a high cross of the Woburns and Leicesters, still the full bred Berkshires running at large with them, are the largest and in the best condition and apparently at a less consumption of food.

In addition to weights, I have plenty of evidence to show, short as their legs appear, that condition for condition, the Berkshires and their crosses beat all other hogs in traveling. I consider this as a very important point settled in the great West, for all the hogs have to be driven to market to be slaughtered, from a few miles up to many hundreds. A full bred Berkshire boar weighing 450 lbs. sold to Captain Simon Bradford, of Nashville, Tennessee, in a warm, dusty day, was driven 30 miles; others have been driven their 20 miles per day without effort; and I have myself seen them travel off 10 and 15 miles in a few hours without the least apparent fatigue.

JOHN MAHARD, Jr. Esq. of Cincinnati, one of the most extensive pork packers in the State, assures me that the crosses of Berkshires the past season from Kentucky and elsewhere, have invariably come to market with the most ease in traveling with large herds of other breeds. He does not recollect an instance of their giving out on the road, while he has repeated details of animals doing so of other breeds in the drove.

I believe all the above statements to be perfectly true, for they are derived from the most reputable men in the State; and were volunteered me without the slightest solicitation, and my only motive in making this communication, is to do away unfounded prejudices. It is easy enough to import wild boars from the forests of Germany, that will give fleet hounds a pretty sharp run; and again we can cultivate the great Miama hog, such as was grown by the late Mr Saterthwaite of Wainsville, Ohio, weighing 1,400 lbs., but the question arises, are these the most profitable anim ls to the agriculturist? Distinguished and scientific breeders say no!, but request an animal that will grow up in good condition on grass, roots and coarse grain offals, and fully fatten them with a two months' feed on corn, and give a nett weight at sixteen to eighteen months age of 300 to 400 lbs. My own experience confirms all this, but my opinions have been so often protruded in the columns of the Cultivator, that it would be considered obtrusive to add another word. Respectfully yours,

A. B. ALLEN.

Experiments in Maryland.

MESSRS. GAYLORD & TUCKER—In my experiments, as given in a communication published in volume 7, page 14, I stated that I would give the issue of another experiment upon a different plan of cultivation to those in common use among us. Although I have not succeeded in making a hundred dollars to the acre, as I flattered myself, yet it may not be uninteresting to some of your readers to know the result. The lot, when measured by a line, made four and thirteen sixteenths of an acre, but at least five sixteenths should be deducted for ground lost on four sides used as turning ground, which would leave only four and a half acres on which the tobacco grew. As I have given the texture of the soil, I will only add that the north side of this lot, skirted by a body of large trees, is of a bluish clay so compact as not readily to receive moisture; therefore when thoroughly wet, after long rains and hot suns, is liable to hardness. As soon as feeding time had passed in the spring, I hauled out all the manure I could gather in my little yard, and dry straw, which was thickly spread over two acres, beginning at the woods. I judge there was over 200 horse cart loads. Upon the remainder of the lot, I had carted about 25 loads of black earth and oyster shells, partly decomposed; and spread in places to suit my judgment. It would be proper to say this lot the last year was covered with a good crop of clover, which was not grazed until in bloom, and then only moderately so. This experiment in manure, like many others I have tried, did not accord with the views of scarcely any of the knowing ones around me, but to the contrary, to amuse and make merry at my folly, was the effect. If you will suffer me for a moment to digress, I will ask the question, why is it that farmers generally are so much attached to old style and so averse to any thing new in the way of experiments? Is it because they have reached perfection in their business? The casual observer would say no; what then and why is it they refuse so obstinately to make use of the means actually in their way to enrich their farms, clear them of the cancer debt, and ever eating worm, interest, and ultimately to make them happy? The answer could easily be given by those who have tried the matter to their own satisfaction. Would the self-conceited farmers read the agricultural works published among us, and have faith to believe their reports, and candor sufficient to admit truth, they would be constrained to say that experiments in tilling the soil, have been the means of agriculture keeping pace with arts and sciences, and doing her full part in the improvements of the day. It should gladden the heart of every American when he sees what has been done in this new country, towards the comfort and happiness of man, by the issue of successful experiments. As a votary of choice and not of necessity to Agriculture, I feel willing to throw my mite in her behalf; and as a proof of her profuse liberality, I will come to the point and state that the lot here described, was got in good order, checked off and hilled, making 34,000, or about 7,500 to the acre, being near 2 feet apart. It was planted in tobacco in good time, during an excellent season; it took root and grew off finely. I had it worked once a week for six weeks with the hoe, plow and harrow, when I had to desist on account of the rapid growth, the leaves reaching from one to the other, which soon shaded the land, thereby retaining a moisture and preventing the growth of weeds. The success in part of my plan, I must attribute to the weekly stirring the land; while my neighbors, who pursued a less difficult plan in the beginning, had more to contend with in the end, with less profit for their labor and prejudice. I believe there was not 1,000 plants but what matured. I had it cut early, with as little waste as possible, and from 9 to 10 plants speared on a 4 foot stick, and the whole hung from 6 to 8 inches apart throughout a 60 feet tobacco house, 30 wide including the shed, which was built expressly for the crop. It may seem a large house for the product of 4½ acres, but there were only 2 rooms in the 10 feet shed left vacant. When cured, I was particular in having it weighed. The gross amount was 9,000 lbs., 1,000 less than I promised myself, but when I received my account of sales, the nett amount was 8,250 lbs., sold for $4.10, or $91.22 cents per acre, produced from the same lot on which I raised 22 bushels wheat and 60 bushels oats.

I have by actual experiment, and to my own satisfaction, tried corn, oats, wheat and tobacco, and think I am prepared to judge of the relative value of each crop produced from our soil. I will now give the gross amounts and expenses of my best crops upon a clover fallow. I will make the statement as accurately as I can, by beginning with tobacco, the most expensive and decidedly the most profitable: I have endeavored to count every cost, so as to bear the scrutiny of an examination.

1840.

1832 lbs. tobacco from an acre, selling less than $5 per cwt., or for		$91 22
Expenses in plowing, harrowing and hoeing,	$8 00	
Plants, planting, topping, suckering, worming, cutting, spearing, hauling and housing, say,	8 00	
Stripping and packing,	5 00	
House room and interest on land,	5 00	
Freight and commission,	2 00	
Manure and sundry expenses,	3 22	
		31 22
So much for tobacco under 5 cts. per lb.,		$60 00

1837.

22 bushels wheat sold for $1,50 per bush.; and straw $2,		$35 00
Expenses of plowing, harrowing, rolling and seeding,	$5 00	
2 bushels seed at $1,50,	3 00	
Cutting and securing,	2 00	
Interest on land and use of barn,	2 50	
Thrashing, freight and commission, 12½ cts. per bushel,	2 50	
		15 00
So much for an acre in wheat above its usual price,		$20 00
60 bushels oats sold at 45 cts., straw worth $3,		$30 00
Expenses of raising should be considered less, but the freight and commission brings up for near treble quantity,		15 00
See the yield from so good a crop of oats,		$15 00
40 bushels corn worth 50 cts., tops, blades and shucks, $5 00		$25 00
Preparation and cultivation of land, same as tobacco,	8 00	
Planting and securing the crop,	4 00	
Interest on land, house room, freight and commission,	3 00	
		15 00
So much for the universal crop per acre,		$10 00

It may be seen from the above statements which have been prepared with some care, that an acre in tobacco at 5 cts. per lb. is equal to 3 of wheat, 4 of oats and 6 in corn. For fear prejudice might be thought to be in favor of tobacco and against corn, it is but just to say it was precisely the reverse; for when I commenced in my little way, it was to find out in what my farm would give the greatest return from. My neighbors will please pardon me, for calling it by the same name their 4, 5 and 600 acre tracts are called by, and bear with me and hear me out; then compare your nett gain upon stock in trade, after deducting 6 per cent as I have done throughout, which you can procure for money without trouble.

I will now give you a short recapitulation. System and economy have been my watchword from the start. I commenced with the three lot rotation as follows:—I sow a lot every spring in clover on wheat. I have a lot to graze after blooming, and the third lot having been long enough in clover, is fallowed and put in tobacco in the spring and wheat in the fall, and clover in the following spring, and so on in succession. By this course, with the application of all the manure I can procure conveniently, I have improved the soil both in depth and quality, to produce what I have stated. I have also taken some pains to find the manure which acts best upon the soil, and think I have succeeded, which is in the power of every farmer, yea, his duty as a faithful steward; but I have not room in this letter to give my trial of manure, but will merely say the absorbents have all the advantage over the cohesive articles, such as lime, ashes, &c. I will give a statement of 3 years product from my 7 acre lot, 1st and 2d years: in tobacco and corn, $500; wheat $200—3d year, in grazing, in beef, veal and butter, $50, making $750; and although my farm contains but about 26 acres, yet not ⅔ths of that has been in successful cultivation, owing to a meadow marsh and a public lot; yet I find by turning to the folio in my ledger, the products of 17 acres in the 4 years, have amounted to $2,500, including my present crop of tobacco, though only a half a crop, owing to a scarcity of plants; for the great quantity of worms and scarcity of plants will form an epoch in the history of the beautiful plant. I pursued the plan of debiting and crediting every thing to my farm, and striking a balance at the year's end, and working interest on the same; and I find after estimating the purchase, buildings and labor, and every expense whatever, that I have $500 over and above cost, and my little patch of earth clear; the worth of which I am willing to have estimated by the reader's own judgment from this communication.

DAVID G. WEEMS.

Tracey's Landing, A. A. Co, Md., Feb. 4, 1841.

Culture of the Hop.

MESSRS. GAYLORD & TUCKER—As I have derived much useful and practical information from the perusal of your columns, and more particularly the communications of those correspondents who have given us the practical result of their labors; and as I practice farming by what I call the *Debt and Credit System*, I herewith send you an account of four successive crops of Hops, four acres, grown on a dry, gravelly soil. First, land made rich by 100 loads manure per acre, and plowed in; then marked in the rows 6 by 7 feet, or 7 by 8, as suits convenience; then drop from 4 to 6 cuttings to a hill, and cover 4 inches. This completes the operation for the first year. Corn or potatoes may be planted between the rows the first year.—They should be kept free from weeds through the season. Now the account:

East Hop Yard Dr. in 1837.

To sticking poles, cultivating and tending through the season,	$50 50
To picking, at 12½ cents per box,	106 75
To box tending, including board,	45 37
To boarding girls, while picking,	66 00
To 110 yards hemp bagging at 20c. per yard,	22 00
To pressing 8,060 lbs. hops, at 12½ cents per hundred,	10 07
To coal and labor in drying,	49 50
To interest on first cost of land, at $60 per acre,	16 80
To transportation to Utica,	12 00
To decay of poles,	6 00
Whole expense,	$383 99

East Hop Yard, Cr.

By 8,060 lbs. hops, sold on contract at 14c. though market was but 5c. amounting to	$1,128 40
Deduct expense, leaves a gain of	745 41

I do not include the cost of manure or poles, as the yard was ready for working when I purchased the farm.

Second Year—Oct. 14, 1838—*East Hop Yard, Dr.*

To labor in tending and cultivating, and 55 loads manure at 25 cents per load,	$70 50
To picking, including board,	113 26
To labor in box tending,	13 50
To 150 bushels coal and drying,	18 00
To hemp bagging,	16 00
To pressing into bales,	6 50
To cartage,	2 00
Interest on first cost of land,	16 80
Decay of poles,	8 00
Whole cost,	$264 66

Oct. 14—*East Hop Yard, Cr.*

By 4,068 lbs. hops, sold to U. Leland, at 12½ cents per pound, amounting to	$508 50
Cost deducted, leaves	343 84

Third Year—Sept. 30, 1839—*East Hop Yard, Dr.*

To 50 days labor including board,	$42 20
To picking 558 boxes, at 12½ cents per box,	69 38
To board in harvesting, at $1 per week,	61 00
To box tending,	29 00
To 150 bushels coal and drying,	19 00
82 yards sacking, at 20 cents per yard,	16 40
To pressing,	6 50
To transportation to N. York, at 48 cents per 100 lbs.,	21 31
To 55 loads manure, at 25 cents per load,	13 75
Interest on land,	16 80
Decay of poles,	8 00
Whole cost,	$292 34

Oct. 19, 1839—*East Hop Yard, Cr.*

By 5,480 lbs. Hops, sold to C. & S. Milbank, at 18½ cents per pound,	$1,014 86
Cost deducted, leaves,	722 46

Fourth Year—Oct. 8, 1840—*East Hop Yard, Dr.*

To 60 loads manure,	$15 00
To cultivating and tending through the season,	46 67
To picking 427 boxes, at 12½ cents per box,	53 38
To boarding hop pickers,	48 00
To labor in box tending,	31 50
To drying,	10 00
To 150 bushels coal, at 6d. per bushel,	9 00
To 63 yards sacking,	12 60
To pressing,	5 00
To hauling to canal,	2 50
Interest on land,	16 80
Decay of poles,	8 00
Whole expense,	$258 65

Oct. 8, 1840—*East Hop Yard, Cr.*

By 4,000 lbs. hops; sold to U. Leland, at 30c. per lb.	$1,200 00
Expenses deducted, leaves	941 35

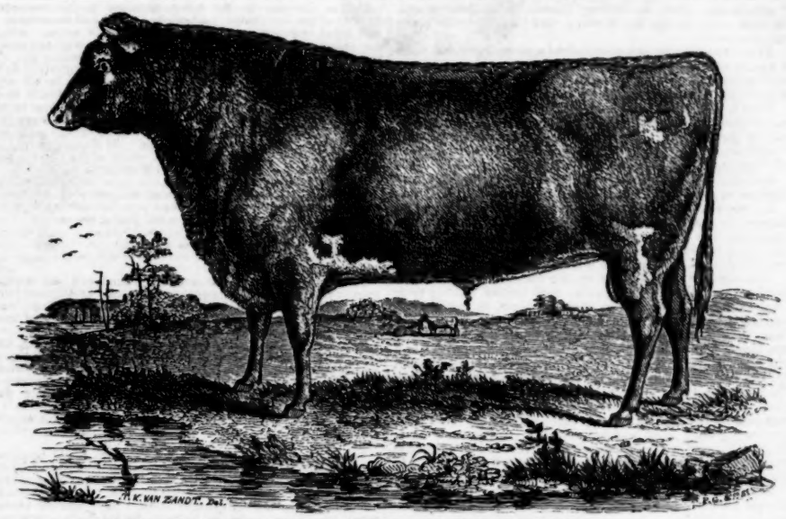
Assuming 5 cents per pound for the crop of 1837, which was the market price, the aggregate of profits of the four successive crops, is,

Crop of 1837, gain,	$19 01
Crop of 1838, gain,	343 84
Crop of 1839, gain,	722 47
Crop of 1840, gain,	941 35
In all,	$2,026 66
Now deduct the outfit:—400 loads manure, at 25c.	$100 00
5,600 cedar poles the man set on the yard, at 6¼ cents apiece,	364 00
which, deducted from the sum total, leaves of actual gain for crops,	$1,552 66

Hamilton, N. Y., 1841. JAMES H. DUNBAR.

MESSRS. EDITORS—We send you the weight of two lambs, dropped on the 22nd of Feb. by two half-bred South Down ewes. They were weighed at fourteen hours old—one weighed 13 lb. 2 oz. and the other 13 lb. 6 oz. One was got by a pure bred South Down buck, and the other by a Cotswold. As the weight was much above that of ordinary lambs, we are induced to publish it that our brother farmers may avail themselves of the advantage to be derived from good stock.

Alamuchy, N. J. 3rd Mo. 1. J. & S. ADAMS.



SHORT HORN BULL NORTHUMBERLAND.—[Fig. 53.]

Messrs. Editors—You have here a portrait of my Short Horn Bull "Northumberland." He was two years old on the 23d of Dec. last—his color is principally red, though interspersed with a few white spots—his form is thought by connoisseurs to be very perfect; and his pedigree I believe will satisfy the most fastidious; but as it will be given in the next vol. of the Herd Book now about being issued, I will only say, that his dam was "Appolonia," selected and imported by myself in the spring of 1838, and his sire the "Prince of Northumberland," of whose merits, several in this country as well as in England, can bear witness. As an evidence that they were thought to be of no ordinary character, I was told that an offer of £500 from some Kentucky gentlemen, had been refused for him. Truly yours,

E. P. PRENTICE.

Mount Hope, near Albany, April 23, 1841.

Pitt's Thrashing Machine and Separator.

Messrs. Editors—Living as I do, near where Mr. Pitts manufactures his Thrashing and Separating Machines, I am frequently called on for information in regard to its merits, which has led me to investigate its operation; and as some information of its utility may be interesting to some of your readers, I now intrude myself again on your notice, and will give such information as I have been enabled to obtain, together with my opinion of the machine. I would premise, however, that I have no concern or interest in the manufacture or sale, nor have I been solicited by Mr. Pitts to say any thing in its favor; and I have no motive in recommending it to the public, other than to aid the farmer in procuring a very valuable and useful article, and to assist a worthy, ingenious and industrious mechanic.

It is only about ten or twelve years, I believe, since the energies and mighty genius of our countrymen was first aroused to this subject, since which improvements have progressed, and I will venture to say, more has been accomplished in simplifying and bringing them within the reach of our prudent and calculating farmers, than had been accomplished for thirty years previous.

The first notice of Pitt's machine for thrashing and cleaning grain, we find in the "Maine Farmer, vol. 4," published at Winthrop. The Editor, Doct. Holmes says, "We were invited the other day to witness the operation of an improvement in the mode of thrashing and separating or cleaning grain. The machine is the joint invention of Messrs. J. A. & H. A. Pitts of this town. It thrashes the grain clean, carries the straw off, and at the same time separates the grain completely from the chaff."

In the 5th volume of the same paper, we find the following testimony of the same machine. "An improvement in the mode of thrashing and cleaning grain has been effected by Messrs. J. A. & H. A. Pitts of Winthrop, which we think exceeds every thing we have heretofore seen or heard of. The improvement consists in adding a separator of a simple kind to the common thrashing machine, whereby the straw is separated from the grain, and the grain winnowed from the chaff and foul seeds, in a complete and expeditious manner, all at one operation of the machine." This is the testimony of ten gentlemen who had seen the machine in operation.

It also appears that this machine was introduced into the State of Mass. in the fall of 1837, where after it had been fairly tested, it received the unqualified approbation of those who had purchased or employed the machine. This will appear from the following testimony. "We own one of Pitt's Machines for thrashing and cleaning grain. Since we have had it, we have thrashed for about forty different farmers, and we are happy to say, all have been perfectly satisfied with its operation; and we will add, it is the best mode of thrashing and cleaning grain we have ever seen, the machine having answered our most sanguine expectations." Signed by Samuel March, Luther Stockwell and Leonard Dwinnell.

It was also exhibited at the Essex County Agricultural Society's Fair, where it was highly approved of, and a gratuity of ten dollars bestowed.

In July 1838, the Editor of the "Maine Farmer" again says: "Having frequently recommended this machine to the consideration of farmers, it is gratifying to find that in every trial it has sustained its good reputation. It is, beyond a doubt, the best apparatus for thrashing and cleaning grain that has as yet been introduced. The experience afforded by two years almost constant use, corroborates the high recommendations which have been heretofore given; and the unceasing demand for it, is a proof that it performs to the entire satisfaction of all who have employed it."

We next find this machine in the State of New-York; and how was it received here?

The first notice of it was published in the Oct. number of the Cultivator in 1839, by the late Judge Buel, who had one in operation on his premises for five days, which gave him a fair opportunity to test its usefulness. He says, "This machine was patented in June 1837, to J. A. & H. A. Pitts, Winthrop, Maine; of course its merits or demerits can yet be but partially known to the American farmer. We heard it highly spoken of, but as hearing is not seeing, and as it is our practice not to recommend any new implement, till we are satisfied of its utility, we have waited for ocular demonstration, before we would venture to join in its praise, but now having seen it in operation some days on our premises, we are prepared to give it our unqualified approbation, as an excellent machine for the purposes intended." He then goes on and describes the machine and its advantages over the common thrasher; that it can be used in the field in fair weather, without wasting the grain, &c.

The writer, in company with Rev. H. Colman, of Massachusetts, and H. D. Grove of Hoosick, witnessed the operation of the machine at the time above mentioned, and were highly gratified with its performance.

In October 1839, the incidental committee of the Kennebec Agricultural Society, reported as follows: "Pitts' Separator—The machine for thrashing and cleaning grain, invented and patented by J. A. & H. A. Pitts, was exhibited by Capt. Benjamin, of Winthrop. As this machine has formerly received a premium, we can only say that the construction of it manifested skill and faithfulness in the manufacturer. The merits of the machine are now well known and duly appreciated; one hundred of them having been sold from one shop, in a comparatively short time."

In December 1839, the writer was one of a committee invited to witness the operation of one of these machines; and for our report, I would refer the reader to page 82 of the 7th vol. of the Cultivator; and so thoroughly convinced was our chairman *of its superiority*, that he purchased one for his own use.

In January following, we find in the Utica Observer, four certificates signed by six farmers who had employed and witnessed the operation of this machine in that vicinity for some days, who give it their unqualified approbation; and as evidence of their sincerity, two of the number purchased a machine.

We hear nothing more of this machine until August 1840, when Mr. Tucker, in the Cultivator of that month, says—"We witnessed the operation of this machine last week, at the barn of Mr. Bennett, Watervliet, and its performance equaled our expectation; it is a great saving of labor over the ordinary thrashing machines. The operation of thrashing and cleaning being performed at the same time; it has, wherever it has been put in operation, been received with the highest approbation; and was considered by the late Judge Buel, as the best adapted for its purpose, of any machine he had ever seen. It was at his suggestion that Mr. Pitts removed to this city for the purpose of manufacturing his machines; Albany being, from its water communication to every part, one of the best locations for such a branch of manufacture."

In the 7th vol. and 11th number of the same paper, in a communication by R. Harmon, jr., where an allusion is made to one of these machines exhibited at the fair at Rochester, he says,—"Mr. Pitts was present with one of his grain thrashers and cleaners, and he deserves the thanks of the wheat growers of Western New-York for his perseverance in constructing a thrasher and cleaner whereby grain can be thrashed and cleaned for a less sum than can be done with any machine that has yet been introduced."

At the Ontario County Fair held at Canandaigua last fall, the first premium was awarded to this machine, but I am informed was withheld on account of not having been manufactured in the County.

In 1839, this machine found its way into Maryland, and the account given of its operation by R. J. Jones, Esq. in the American Farmer, published at Baltimore, almost exceeds credulity. Mr. Jones says,—"The machine got out in fifteen minutes, ten bushels white wheat, as clean as it could be done by passing it through the fan three times, if got out in the common way. Since that period, I got out in 4½ days 1,081 bushels of wheat and 336 bushels oats. First day 204—2d day 249—3d day 206—4th day 252, and 5th day 173 bushels red wheat, weighing 66 lbs. by the steel-yards, which will be an average of about 240 bushels per day. Some time was lost, too, by the breaking of the large band of the horse power. The wheat got out by this machine commanded three cents per bushel more than any other in market," &c.

I might go on and give other testimonials of its usefulness and reception in different sections, but I think enough has been said to satisfy any reasonable person, that it is a very valuable and useful invention, and well worth the attention of the farmer who consults his own interest.

I have seen these machines in operation, and managed by the farmers themselves, driven by two and by four horses; and in all cases, so far as I have any knowledge, it has given entire satisfaction.

Some one may ask if I am so much in favor of these machines, why I do not have one myself? In reply, I would say, that about five years ago I purchased one of Hale's one horse power and thrashing machine, and so far as thrashing was concerned, it worked well, but then it took two hands nearly as long to clean the grain as it did to thrash it. For this reason I felt a great desire to have one of Pitt's separating and fanning machines attached to my old thrasher; and after considerable persuasion, I finally succeeded in getting Mr. Pitts to undertake it, and am now happy to say he has succeeded beyond my most sanguine expectations. I can now say I have one of Pitts' separators and fanning machines in successful operation; and he is satisfied that he can adapt his separator to any common thrashing machine, and in such form that the straw carrier can be laid off from the fanning mill, and the fanner will be used in the common way if necessary.

As regards the amount of grain that can be thrashed and cleaned in an hour or a day, with one of these machines, much depends on the kind, quality and situation of the grain, as well as the power applied. Those things should be taken into account in doing a great day's work with any thrashing machine. I have seen certificates from Maine and Massachusetts, where they are extensively in use, which fully sustain me in the opinion often expressed, "*that this machine will thrash and clean in a day as much as the ordinary machines will thrash; each machine being propelled by the same number of horses.*"

Now, if I am correct, it is easy to see what would be gained by using one of these machines; but as some farmers seem to think the labor of fanning is of little consequence, it would be well for them to make a calculation. It should be understood, however, the labor of two hands is saved in the first operation, in addition to the labor of fanning.

The only objection I have ever heard against this machine is the price, which is $150 without the horse power, and $250 with the power. In calculating the difference in expense between this and the other machines, the fanning mill should be taken into the account.

In view of what has been said, it would seem that this mode of thrashing and cleaning grain will soon be adopted throughout this country; and I would therefore respectfully suggest to those who are having new thrashers made, to have the shafts at each end of the thrashing cylinder, of the same length, so that another pulley may be added; and then they will be prepared to attach the separator and fanner, at any time they may think proper.

One thing more; Pitt's thrasher is calculated to turn one thousand times per minute. A horse on a ten foot lever, will go round three and an half times per minute. I mention this to show that when Pitt's separator is attached to the common sweep power, it must give the thrasher no more than one thousand revolutions, while the horses are going round three and a half times; all above this is useless and unnecessary, and calculated to make the machine run hard.

In conclusion, permit me to say, the improvements Mr Pitts has lately made in the construction of his machine, carry it still nearer perfection, and give it additional claims to the patronage of the public. C. N. BEMENT.

Ornamental Gardening.

Messrs. Editors—The article on Ornamental Gardening, which was given in a recent Cultivator, seems to have awakened some interest on the subject, and many applications have been made to me, some personally and several by letter, for further information on particular points, especially respecting the artificial fountain and the sun dial. It appears to be a general desideratum to find where or how those articles can be obtained, and some would like to know the cost. I have no doubt that this will meet the eye, through the wide extended circulation of your little traveler, of some ingenious mechanic in Albany, New-York or elsewhere, who will furnish the articles in good taste, and at such prices as will accommodate both the purchaser and the manufacturer, and be a source of pleasure to the one and of profit to the other. I would particularly recommend the sun dial, as from the cheapness with which it could be constructed of cast iron or some other suitable material, it is natural to suppose no farmer would be without it. A. WALSH.

The Weight of Six Hogs.

Messrs. Gaylord & Tucker—I send you the weight of six half blood Berkshire pigs, which I have just sent to market. They were littered the 6th day of May last, and run through the summer with a lot of hogs (ten in number,) which had been wintered, and were fed only with them on slops and the whey from a dairy of twenty cows, with the addition of about four quarts of cob meal each day to the whole lot. The 21st of Dec., I commenced feeding them with cob and oat meal, and in about three weeks with corn and oat meal (about two thirds corn,) all they would eat, which was daily, about one and a half bushels. On the 22d of March, they were butchered and weighed, being ten months and fifteen days old, as follows: two 355 pounds each; two 330 lbs. each; one 345 lbs.; one 281 lbs.; total 1,996 lbs. *Brimfield, Mass.* S. HOMER, Jr.

American Society of Agriculture.

An address to the farmers of the United States; to every friend of agricultural improvement; to every citizen of the United States who desires to see elevated the character and standing of the cultivators of American soil.

Most respected and most respectable friends and brothers, give me your attention for a few fleeting moments; your humble brother, who now addresses you, published a suggestion about three years ago, for the purpose of arousing your attention to the subject of forming a National Agricultural Society; that suggestion was then responded to with a hearty good will throughout the country. But action upon the subject has been overwhelmed by the political whirlwind that has swept over our country. In the first lull of the succeeding calm, the proposition to form such a society has been renewed, and with one exception, has met with a cheering "God speed the project." None doubt the utility of the proposed society, yet doubtless there are many who would like to see the object, end and aim of the society more fully explained. To such I now offer some of my views, and in doing so, invite you all to give yours; for this is one of the objects of a National Society to interchange our views.

Many warm friends of the measure, who are anxious to see the society in operation, cannot see how it is to be organized. They say, "No doubt if once organized, it would daily increase in strength and usefulness; but it is like a great complicated piece of machinery, of great use and value when once in motion, but difficult to start." Now, to me there is no difficulty in the way. All that is wanted is a few active engineers to put the machine in motion. Immediate and decided action of a few of the active friends of agricultural improvement, who must assume the responsibility to act as engineers as well as pioneers for the whole Union; and having once given the society an existence, it will flourish and increase in strength just as our political Union has done.

The following plan of organizing the society is suggested to your consideration:

Let as many of the friends of the project as can be induced to do so, meet at the city of Washington, on some day of the autumn of 1841, (the particular day to be hereafter fixed,) and there form a constitution for the society, and elect officers, to wit: a president, a vice president for each state, a recording secretary, a general corresponding secretary, and a corresponding secretary for each state, county, city and principal town in the United States, a treasurer, and probably a publisher of a national paper, to be called the Journal of the American Society of Agriculture.

The first officers will hold their offices until the next annual meeting, which should be held at the capital of that state which had furnished the greatest number of members at the time when the president of the society should issue his proclamation to convene the second meeting.

The place of each annual meeting should be fixed at the preceding one, in some state other than the one where it was then held, so as to give the members in each state an easier opportunity of attending.

As in the formation of all such associations it is necessary to have some cash funds, are you willing to donate "a mite" to accomplish this great national object?

If so, an opportunity will hereafter be offered you to do so. Upon some of you I hope to make a personal call for that purpose, should it be thought advisable, after due reflection, to proceed in the organization; therefore, I pray you to give this subject your serious consideration.

If you should aid in the formation of this society, will not your children "rise up and bless you?" For one of the first objects of the National Agricultural Society should be to connect with it a "National Agricultural School."

Not such a "National School" as is the only one we now have, which has, with too much truth, been called "a nursery of aristocracy"—where the humble son of a farmer is rarely admitted, and if admitted, what is he taught? Not how to cultivate his mother earth, and make her sons glad; not how to increase life, but the art of destruction, the trade of blood!! Such is now your only national school.

Such will not be the only one, in a few short years, if you will lend your energies to form a National Society, whose motto will be, "to elevate the character and standing of the cultivators of the American soil." For when once organized, you will soon show a united force of many thousands, whose voice will be heard in the halls of congress, demanding our birthright. Be assured we shall be heard. "Let all our energies be concentrated, and we can do any thing in the power of man; but divided and scattered as we are, we spend our forces, as it were, drop by drop; whereas, *union would make us mightier than a torrent.*" We *can*, shall we say we WILL form such a torrent as will overwhelm our political rulers, unless they will do justice to the agricultural class of the community.

As soon as the National Agricultural Society is formed, let us ask Congress to appropriate the "Smythsonian fund" of half a million of dollars to establish a National School. If we unite as we should do, our "torrent" will be too strong for time-serving politicians to resist.

I look upon the National Agricultural School as the greatest blessing to flow from the National Society.

But the Journal of the Society will also prove of immense advantage. It will embody a vast amount of matter, useful and interesting to every cultivator in the Union. The most carefully prepared tables of the productions of the earth, from every section of the Union, will be kept constantly before the reader, totally different from those vehicles of deception, and often fraud upon the farmer, called "prices current." It is by the quantity produced, and the probable demand therefor, that we can understand whether it is for our interest to sell our crops now, or store them up. At every meeting there would be numbers from every state in the Union, as ready to impart as receive information.

"All the inducements of the business of a National Society, a National Fair, and a National School," and the honor of being a member of such a society, would be enough, I think, to make us all feel that it would be a greater honor to be elected a state delegate to one of the annual meetings of the National Society than to be elected a member of Congress.

It cannot be expected in this short address, that I should point out all the good that would flow from the action of the proposed society. But if we are convinced that the effect would conduce to the interest and happiness of the great mass of agriculturists of the Union, let us act, and with spirit too.

And now, my friends, one and all, do you approve of the plan of organization? Speak out boldly if you do not. And if you do not object, the leading friends of the measure will fix upon a day for the first meeting, and proceed in the manner proposed.

There has been an argument raised against organizing such a society at present, "because the public mind has not been sufficiently instructed, and does not sufficiently appreciate the advantages of such an association to render it successful."

Now it is on this very account that the friends of the proposed National Society wish to see it established, that the operations thereof may wake up an excitement throughout our "wide scattered population," that shall be the moving cause of changing the "condition of the country."

It is also argued that the failure of several state and county societies is proof that a national one must fail also.

Let me ask if this is a valid argument? This short quotation, in my mind, is sufficient to knock the whole force of the argument into nonentity: "Divided and scattered as we are, we spend our forces as it were, drop by drop, whereas UNION would make us mightier than a torrent."

The object of all state and county societies has been of a local nature. Their existence has been known only in their own locality, and they have been too weak in numbers to command legislative aid. Who can tell what would have been the effects if all the members of all the local societies in the Union had been attached to one National Society? If all the exertions of all these societies, collectively and individually, had been concentrated upon one object, would it not have formed a "torrent" as mighty, comparatively speaking, as the thundering Niagara. If the nation, instead of individuals, had received all the light of the intelligent minds that have been devoted to these local societies, would it now be said "that the public mind was not sufficiently enlightened to appreciate the advantages to be derived from a National Society?" If all the money that has been devoted "drop by drop" upon "model farms" and local schools had been concentrated, should we not now have an institution worthy the great country we inhabit?

If our population is scattered; if "long distances intervene between the most efficient friends of agricultural improvement," so much the more need of forming such a society as shall draw them together in "one strong bond of brotherhood."

Is it a fact "that the time has not yet arrived when such an association can be organized with a reasonable certainty of success?" If such is the fact, I am disappointed in the character and energy of my countrymen.

Once more I call upon you to answer me this question; am I so disappointed in your character?

Do not refuse your countenance to the measure because it does not originate in high places. For "if we are ever to have a National Society of Agriculture, it must be got up by the farmers themselves;" & as one of that class I now address you.

If the present attempt at organization fail, the matter may be considered as decided for the present generation.

The only question then is, shall the matter sleep until you and I are past waking?

I am a devoted friend to present organization of a National Society of Agriculture, and a National School, *that will elevate the character and standing of the cultivators of the American soil,* And your friend and brother,

Lake C. H., Ia., April 1, 1841. SOLON ROBINSON.

Inquiry—Raising Chestnut Timber.

MESSRS. GAYLORD & TUCKER—Will you or your numerous contributors give me accurate information on raising chestnut timber from the seed? In this State, we can buy the nuts ready for market at $1 per bushel on the high ridges; and as the chestnut timber is fine and durable for fencing, it would be of much advantage to many farmers could we fall upon some cheap and certain mode of propagating the trees from the seed. Must we plant the nut where the tree is to stand, or can the trees be best raised in a nursery and then transplanted? If the former be the only mode, when must we plant the seed, in the fall or spring, and at what distance? If the chestnut will bear transplanting, at what season must this be done? I wish to plant, as soon as I can learn how, two rows of chestnuts, on both sides of the road for a mile in length, and should be thankful for early information.

Any information on producing the red cedar from the berries, would be also gladly received. Ours is a woody country, it is true, but it will soon be bleak, unless we resort to some method of restoring timber as fast as we destroy it.

FRANCIS H. GORDON.

P. S. It may be well to let some of your readers know, that we have tried the Jerusalem Artichoke here and find it to surpass every other food for hogs; because they grow without culture and the hogs root for their living and keep fat and saucy. In this vicinity, the artichoke is in high repute. I have 20 acres in this prolific root, and consider the product worth more than the same number of acres in corn, although the artichokes require no culture, while the corn requires much. *Clinton College, Tenn., March* 18, 1841.

Farmer's Song.

[Extract from a manuscript, still in the hands of its author, and probably, with him, destined to the ocean of oblivion If you think the scrap worthy of the little space it would occupy, it may meet a better fate. A. W.]

In a sweet healthy air with a farm of his own,
Secluded from tumult and strife,
The farmer, more blest than a king on his throne,
Enjoys all the comforts of life.
When the sweet smiling Spring sheds its perfumes around,
And music enchants every tree,
With his glittering plowshare he furrows his ground,
With a mind independent and free

When Summer to fruit the sweet blossoms transforms
And his harvest fields wave with the breeze;
Sweet anticipation unfolds all her charms,
And points to contentment and ease.
When bountiful Autumn her treasures bestows,
And her fruits are all gathered and stored;
His heart to the Giver, with gratitude glows,
And plenty presides at his board.

When Winter howls dismally over the earth,
And want tells her tale at his door;
Serenely he sits by his clean blazing hearth,
And dispenses relief to the poor.
Then let idle Ambition her baubles pursue,
While Wisdom looks down with disdain,
The home of the farmer has charms ever new
Where health, peace, and competence reign.

Light on the Silk Culture.

MESSRS. EDITORS—In my communication in the December number of the Cultivator, I mentioned that I had discovered a very great improvement in the feeding of silk worms, which not only compelled the worms to clean themselves, but saved more than half the expense of gathering and feeding out the foliage, besides accomplishing other objects so important as to make this improvement absolutely indispensable to all who expect to make the silk culture a regular and profitable business. The value of my improvement is acknowledged by all who have any practical acquaintance with the subject; and the principles it embodies are so self evident as to command the assent even of those who are not. My frame for feeding silk worms, will be in operation the whole of the present season, in a cocoonery now building in Burlington for my use, in which four to five crops of from two to three hundred thousand worms each will be reared, beginning in April next. I respectfully invite all of your readers who may be interested in the silk culture, to visit my establishment during the season. They will there see my improvement in operation on a scale of magnitude sufficient for the notice of the capitalist. The reeling of the cocoons, and probably the weaving of silk, will also be carried on during the season.

In other places my frame has been introduced, and such of your readers as reside at remote points, may be disposed to investigate its merits by visiting the several cocooneries mentioned below, where it will be found in use, in many of them on an extensive scale:

James Anderson, Louisville, Ky.; Oliver Morse, Forsyth, Ga.; Daniel Spaulding, Hancock, N. H.; Rev. A. Ross, Kingsport, Tenn.; Charles G. Aikin, Cleveland, Ohio; Jesse Shelly, Jamestown, N. C.; Dr. Joseph E. Muse, Cambridge, Md.; Charles P. Cummins, White House, Cumberland Co. Pa.; Rev. J. R. Barbour, Oxford, Mass.; Dr. F. B. West, Braintrim, Luzern Co. Pa.; H. Wilks, Halifax, N. C.; Miller Hallowes, Saint Mary's, Ga.; Gen. Jno. C. Johnston, Catskill, N. Y.; P. Cage, Woodville, Miss.

Besides these, a much larger list of names might be added.

It is important that the many gentlemen who are about embarking in the silk culture, should be made acquainted with all that is new or valuable in relation thereto. To contribute my share in the general diffusion of such, I have printed several small pamphlets on the silk culture, for the express purpose of distributing them gratuitously to those who write for them at their own expense of postage. Many of your readers have been supplied with them by mail, and there are several hundred copies still on hand, to which those who may be really interested in the silk culture are entirely welcome. They embody facts and suggestions not to be met with in any previous publication.

The recent returns of the late census in Pennsylvania, show us that in fifteen counties, 6362 pounds of cocoons were produced, and 892 pounds of reeled and thrown silk, during the past year. In this state, the marshals return but 1966 pounds of cocoons, as the product of the same year. All of these state returns are exceedingly imperfect, and do not give anything like a fair account of the quantity of silk actually produced, because the marshals commenced their operations while numerous large crops of silk worms were yet feeding. In Burlington county alone, I have no doubt the quantity of cocoons produced would nearly equal 1,500 pounds. In Pennsylvania, the state treasurer paid out $2,101-89, for premiums on cocoons for 1840. As the state bounty is twenty cents per pound, this sum would pay for upwards of 10,000 pounds of cocoons. But it is well known that many persons who reared considerable crops of worms, made no demand for the bounty. Probably the whole silk crop of Pennsylvania for 1840, was equal to 25,000 pounds of cocoons, equal, if of good quality and carefully reeled, to at least 2,500 pounds of silk.

Respectfully yours, EDMUND MORRIS.

Burlington, N. J., Feb. 12, 1841.

Culture of Corn.

MESSRS. EDITORS—I have taken the Cultivator from its commencement, and have derived much information and satisfaction from its pages, and have all the volumes singly bound for future reference. Being bred a mechanic, I was obliged to look to the practice, and learn from the experience of farmers, on commencing the business myself.

Although unable to command but a small capital, still I have been able to succeed on a small scale, so that I am perfectly satisfied with the honorable and pleasant employment of tilling the soil.

I now proceed to give you an account of the culture of a small piece of corn last year, which I believe was the heaviest ever raised in this town, yielding at the rate of 90 bushels to the acre, 900 bundles of stalks, and 1,500 pumpkins. The land had been in pasture about three years. I broke it up early in the spring; being stony, and other circumstances unfavorable, I could not turn it smooth, so I let it lie until near planting time, then dragged it thoroughly; then drawed on twenty-five wagon loads of long manure to the acre; then dragged again, then cross plowed. I then drew shallow furrows three feet apart, and drawed ten loads of manure, which was piled up the year before, so that it was thoroughly rotted, and dropped half a shovel-full in rows across the furrows, near three feet apart. I put my seed to soak at night in warm water, in which was dissolved half a pound of salt petre; in the morning turned off the water, put a small quantity of tar to boiling water, let it cool and then poured it on the corn, which formed a cont of fine varnish on it. I then turned off the water, and stirred plaster with it, as much as it would take up; this I know will prevent crows from pulling it. I then proceeded to plant, first hauling a thin covering of dirt on the manure. After weeding, I put a handful of plaster and ashes, mixed in about equal quantities, on each hill. I plowed among my corn at hoeing, and raised a broad flat hill around it, which I believe to be better than to let the earth remain undisturbed, especially on a hard soil. I have no doubt but there are soils on which corn will do best on a level surface. The variety I planted was the Dutton. Some farmers contend for manuring broad cast and some in the hill; as for myself I contend for both, but I contend to have rotten manure for the hill, which gives corn an early and vigorous start, and the coarse manure yields food to the filling grain.

I have tried many ways in seeding potatoes, and feel confident that I have discovered the best. Let others try it. I believe it will commend itself to any farmer. What farmer has not noticed that when his potatoes sprout in the spring, those eyes on the seed end produce the largest and most vigorous sprouts. My practice is to have storage in the cellar, and in the latter part of the winter or in the spring, commence cutting off the seed end of my largest potatoes which I feed or which are used for cooking, say about one third of the potato. In this way you have the best part of the potato for eating and the seed end ready for planting. I had rather have one third of a large potato cut from the seed end for a hill than the whole potato at the same price. I would say a few words as to the much talked of Rohan. I procured a bushel and half from Albany last spring, planted them the last of April, raised one hundred bushels of grand potatoes. I consider them the best of several kinds I have raised for eating. I would advise farmers when they can procure seed reasonably to try them; plant early, three feet apart, three eyes in a hill, hoe twice and make large hills.

Respectfully yours, HEMAN H. BARBER.

Summer Hill, N. Y., March 20th, 1841.

Notice of Improved Cattle.

MESSRS. GAYLORD & TUCKER—I had occasion to visit your city a few days since, and took the opportunity to go and see the fine cattle, sheep, &c. in the vicinity. My curiosity led me to this from several notices and portraits of animals that have appeared in the Cultivator.

The PATROON'S stock are large and beautiful animals, about 30 in number, which are, as I was informed, descendants from the imported bull Washington and cow Panzy. Ajax is a bull of great weight, good form and fine in many valuable points, and his stock is well deserving of the reputation the public has given it.

The herd of E. P. PRENTICE, Esq. at Mt. Hope, are a specimen of the qualities of good improved Short Horns. His bull Leopard, bred by the Patroon, is a beautiful animal. I only saw him standing in the stable, did not handle him, but by his general appearance I thought him the best bull I ever saw. Fairfax, bull calf, 10 months old, pure white, (not the best color,) yet in point of substance, beauty, and other good qualities, is not equaled by any calf of his age that I have ever seen. His dam Splendor was bred by Mr. Whitaker, England, and imported by Mr. P. about a year since. His sire was Sir Thomas Fairfax, owned by Mr. Faux, England, and is said by many good judges of stock to be the best bull in England. Bull Northumberland, a beautiful red color, from Appolonia, got by the Prince of N——— from the herd of Whitaker. The cow Matilda and a number of her heifers, are beautiful animals, in reality what they have been represented to be in the description of them annexed to their portraits in the preceding numbers of the Cultivator. But as it would be impracticable to give a description of all these fine animals, I would ask Mr. P. to insert (particularly his bulls) their portraits, with a description of them in the succeeding numbers of the Cultivator, as it would interest your readers and favor the public.

The portrait of Mr. Vail's imported heifer Dutchess, is a poor or bad likeness, as it appeared in the September number of the Cultivator, as one would judge from it that she was a large, coarse, inferior heifer, when in fact, I know not where an equal can be found, or one in which are so admirably combined fineness, substance and beauty. Duke of Wellington and Dutchess, Mr. Vail's bull and heifer, show the result of scientific breeding, that is a reduction of too great a size and retaining a full development of valuable points, and keeping in view their constitution, substance and beauty, for which these animals are so highly valued.

I noticed a few lots of South Down sheep. They have the appearance of being a hardy race of animals and I should judge that they would return more in value of wool and mutton for the quantity of keep, than any other breed of sheep.

As it is my design to keep the best breeds of cattle, I took the opportunity to look at a number of lots of Hereford cattle. That they are a good breed of cattle for beef, or that they will improve our native stock, I doubt not, but to compete with Short Horns seems impossible; at any rate I believe no man who has the improved Short Horns and whose farm is well adapted to them, will dispose of any to make room for the Hereford. Yours respectfully, J. PASCO.

Ware House Point, Ct. Feb. 1841.

The Rohan Potato at Quebec.

EDITORS CULTIVATOR—Gentlemen—Having seen several notices in your useful and highly interesting publication, respecting the prolific qualities of the *Rohan potato*, it may not be uninteresting to some of your subscribers who reside far south and west of us to know the result of an experiment, in trying the growth of this vegetable in our northern climate, as a comparison with similar experiments in their warm and more genial regions. On the 10th May last, I purchased two Rohan potatoes from Mr. John Musson of this city, who had imported a small quantity of them from New-York. The weight of the two potatoes when bought was a little over one pound. I divided them carefully and found 15 eyes in one and 14 in the other, having kept the pieces in a warm room for 5 or 6 days, till I could see the eyes in each piece beginning to enlarge, I planted them on the 15th of May last, in my garden a few miles north of this city. I deposited one eye in each hill, which I made 22 inches apart, putting in each hole the usual quantity of stable manure; about the 1st June the plants appeared above ground, and grew with extraordinary rapidity; about the 20th June, we were visited with a severe storm of wind and rain from east, which broke off close to the ground 4 of the plants, when the sprouts were from 10 to 12 inches long. These broken plants never after recovered, and I consequently lost 4 hills out of the 29 which I planted, leaving but 25; these hills had a deep hoeing twice or thrice during the summer. The plants grew with amazing luxuriance, and when I had them dug up on the 15th day of October last, some of the stalks were exceeding 8 feet in length and none were under 6 feet long. The result of the crop was a little over 2¼ bushels, weighing 152½ lbs. The potatoes were unusually large and very unsightly, with deep indentations. One potato in particular excited a great deal of surprise amongst our Canadian farmers, its weight being 4 lbs. and 2 oz. and a great many weighed from 2 to 3 lbs each.

H. GOWEN

Quebec. March 15 1841

Root Steamers, &c.

MESSRS. GAYLORD & TUCKER—The columns of the Cultivator are too crowded with valuable matter, to be made the vehicle of querulous self-love. I will therefore simply remark that your correspondent has assumed to himself much more of my article than belongs to him, and has given to both himself and it greater consequence than the writer intended.

As to the incognito complained of, it was much like the darkness that held Falstaff at such odds, when he assures Prince Henry that "three misbegotten knaves, in *Kendal green*, came at my back, and let drive at me; —for it was *so dark*, Hal, that thou could'st not see thy hand."

One more quotation and I have done:

"*Resolved*, That J. B. Nott, *C. N. Bement*, and Volkert Bullock be a committee to examine such agricultural implements as may come under observation, and present their views of the utility of the same at the next annual meeting." See Cult. Feb. 1839.

Allow me to put aside the "curtain" which has been thread-bare this many a day, and subscribe myself

Respectfully yours, R. FRAN'S ROTCH.

Butternuts, April 8, 1841.

Wool Growing in Buenos Ayres.

MESSRS. GAYLORD & TUCKER—The fertile "Pampas" in the interior of South America have been long celebrated for the immense herds of cattle and horses reared upon them. So abundant are they and so easily reared that they are slaughtered in many places for their skins and tallow alone. Sheep too of native breed, with coarse hairy wool, have been so plentiful that their carcases were used for fuel in burning brick. The expense of transportation and the absence of timber and salt for barrelling alone prevents us from the competition of their meat in our own parts. The attention of agriculturists there has been of late years turned to improving their stocks of sheep by large importations of Saxony from this country and from Europe. An English gentleman by the name of Sheridan began the business with a stock of 60 Saxony and 3,000 native ewes, and in the year 1835 he had increased the number to 45,000, and the grade was very nearly increased to full blood. In the year 1837 he had 90,000, and intended to keep on until he numbered 200,000, which quantity he has doubtless attained ere this time; others were copying his example until the business bids fair to outstrip that of cattle, within a few years. I have a small sample of Mr. Sheridan's clip of 1837, which I enclose to you; I was assured it was below the average of the flock. The prices at which these grades of wool have sold has been from 8 to 12 cents per pound in Buenos Ayres.

The price of government lands there is ten cents per acre. It is laid off in "*estancias*," a league square, containing 5,760 acres English; the face of the country almost a dead level, no timber, but a luxuriant coat of grass.

A cottage is erected in the center of the farm for the keeper, and an ample yard enclosed by driving the trunks of the common peach into the earth, and wattling the interstices with the branches. An "estancia" will support 3,000 sheep, (which is about the size of their flocks.) The only care they require is to yard them at night and during a storm. They will seldom wander beyond the landmarks during the day; at the approach of a storm they turn their heads to the leeward, and feed on until turned by their keeper towards their place of security. An instance has been known where 900 of a fine stock, and the best sheep in it, were destroyed by being in a storm, pressed by the rear ranks into a run of water, until the chasm was filled with dead bodies, and the remainder of the flock passed over. The shepherd does not remain with the flock, but at the cottage, having a horse already saddled and bridled (ready for a sudden call) always at the door in the day time. The streams are few in number, sluggish and muddy. Thus far very little attention has been paid to cleaning the wool for market. It is generally sold in the dirt. Perhaps this has been encouraged by our tariff admitting all costing eight cents or less per pound duty free. But after this year, when our leveling tariff shall have brought down the duty on wool to 20 per cent on its cost, it is calculated that these evils will be remedied and this wool will be fairly brought into competition with our own clips in our own market. Even now I have reason to believe that Mr. Sheridan's large clips have been purchased for this market so as to bring them in duty free. The consequences I leave to those interested to judge of. But while the "Senior" has a farm of 5,760 acres of first rate land for 576 dollars, *affording pasture the year round*, with *semi-yearly and twice increase*, and wool equally fine and valuable, how can our growers compete with him, with a 20 per cent tariff!!! I have derived these facts from an American high in authority at Buenos Ayres. I do not own a sheep, and my personal interest, if any, is the other way. But I have some American feeling, and would not willingly see this great branch of our national wealth crippled or destroyed, as I fear it will be, except the compromising tariff be amended in due season so as to leave the duty not reduceable by filth or merely nominal on clean wool. It is time for wool growers to be up and doing. The next congress will confirm or remodel the tariff. Shall this great interest be left to protect itself, or shall it claim a protection equal to the superior advantages of the foreign grower? Let northern men look to the subject in season. A NORTHERN MAN.

Buckthorn for Hedges.

MESSRS. EDITORS—As the subject of hedging is of great importance to many of your readers, especially those residing in the prairie west, and as you invite all to "do good and communicate" any item, however small, to the common stock of knowledge, I will relate a bit of experience, which may be of essential benefit to many of your subscribers. Last June I received from the east three pounds of buckthorn seed; accompanying the package were printed directions for sprouting the seed of the *hawthorn*, which, like you, I "presumed" were applicable to the buckthorn. Accordingly, I mixed them with an equal quantity of sandy soil, confined the whole in a coarse bag, and buried it in a hillock of earth in the garden, expecting they would sprout in something less than two years. In about three weeks, perceiving that the squirrels had dug a hole in the hill, I opened it, and was much surprised to find the seed all finely sprouted. I immediately transferred them to seed beds, and in a fortnight they made their appearance above ground. It was so late in the season that they grew only one or two inches, and I am afraid the winter has killed them. From this trial I conclude that no preparation of the seed is necessary, but to plant them in early spring, and they will vegetate as quick as onion seed. I think the buckthorn will prove to be better adapted for prairie fencing than any other plant. Very respectfully, C. L. SHEPHERD.

Buffalo Grove, Ill. Mar. 1, 1841.

The Howard Plow.

MESSRS. GAYLORD & TUCKER—As respects the Howard plows, we can say, that for the last fifteen or sixteen years we have sold at least 20,000 plows; and although every plow has been *warranted*, we can safely say, that not a dozen have been returned. Mr. Howard is a first rate workman both in iron and wood, and every plow is made under his own eye. As to materials, nothing is used but the very best, which accounts for his plows being preferred for heavy work; as for strength, durability, ease of draft, and doing the work in the best possible manner, they cannot be surpassed by any other plow. We should have been pleased to have seen you at Worcester, for then you could have judged for yourself. You would there have seen the Howard plow run rods without a holder, taking the furrow up and turning it completely over, turning every thing from the top directly to the bottom, leaving the bottom of the furrow as smooth as it possibly could have been done by shoveling the dirt out by hand. You will notice by the report of the committee, that Howard's plow run about seven per cent lighter draught than any other plow on the field. I presume you have noticed the report, where they recommend the Howard plow, where *strength* is wanting. There can be no mistake but the Howard plow is far the best plow for all purposes that has been introduced, as respects strength and durability, and for doing the work in the best possible manner. JOSEPH BRECK & Co.

Boston, Feb. 9, 1841.

Animal Manures.

HORSES prefer coarse hay, and cows prefer fine hay. A cow, therefore, may be profitably kept by him who keeps a horse: for the horse is offended, and objects to feed on hay in his own crib, after breathing on the finer part of the hay, while eating the coarser parts: yet the cow appears to prefer the refuse part and leavings of the horse, after he has selected and eaten the coarser parts of the hay.

In speaking of the qualities of manure—it is common to say *rich horse manure*. There is probably some error or misunderstanding on this subject, as to the quality of different manures.

The droppings of the cow is termed the poorest of all animals, and that of the horse stable and hogpen are called the richest, and produce the greatest effect on vegetable growth All these distinctions and qualities owe their richness to promote vegetable growth, to the quality of the food of the cow, *horse or hog*, &c.

If the horse is fed solely on grass or hay, his droppings are of no greater value or richness than that of the cow which feeds on the like food. It is the same with the manure from hogs. If the hog eats manger swill void of grain, &c. or is fed on grass, as the cow is (and the hog will pasture on grass as well as the cow or ox,) his droppings are of the same value and quality only, to promote vegetable growth.

The horse is generally fed on grain largely, and so is the hog to fatten him, and then their droppings are rich in proportion to the quality of the grain they eat, and are more valuable as manure.

So the reason why night soil or poudrette is richer than other manures, is because the human food is of richer materials.

I think, however, that the manure from sheep, when fed on grass, is richer than that from the horse, cow or hog; and the reason appears to arise, not from a departure from the same principle, or different doctrine than that I have stated—but because the sheep will not eat good and long grass, called the best pasture for the cow and the horse; but they feed only on short grass, too short for the cow and the horse.

Here the same rule obtains. The grass of new growth and close to the roots, is much more sweet, nutricious and of richer quality over the same grass of larger growth.

Hence the droppings from sheep are richer in that proportion, as stated. The manure, therefore, takes its quality for promoting vegetable growth, from the quality of the food the animal feeds on, from which the manure is dropped. Respectfully, D. TOMLINSON

Schenectady, 12th March, 1841

Proper Time for Cutting Bushes.

MESSRS. GAYLORD & TUCKER—When I first settled in Yates county, I bought a farm which was much neglected, and the bushes and briers were grown up round those fields which had been cleared, almost to the tops of the fences. I took a strong sythe and cut them close as I could to the ground about the second quarter of the moon in June, when the leaves were nearly the full size, and the sap flowed the most freely of any time of the year; and they seemed to bleed to death, (that is, the sap flows from the root and dies;) not one out of fifty ever sprouted again. The experience of 25 years has, in all cases, proved successful—also in cutting all underbrush and saplings of almost any size; not one in ten ever sprouted. I have practiced it on oak land and on low lands and almost all kinds of timber. I have often plowed out the stumps with a single team, where it had not been cut over four to six years, that were a foot through; and from my experience I would pay treble wages at that time of the year if I wanted to clear land, rather than have them cut at any other time of the year for nothing. But do not cut any other timber which you want to preserve, without you split it or take the bark off, for it will soon decay and rot and be full of worms. I am well convinced that if you want timber to last, it should be cut after the leaves begin to fall, say in October or November. I think it will last in the ground or out, nearly twice as long as it will if cut at any other time of the year. Try it and see for yourselves. ABEL PECK.

Benton, Yates co., N. Y., Feb. 25, 1841.

Horses vs. Mules—Correction.

MESSRS. GAYLORD & TUCKER—There is an important error in my last communication in the part which relates to *mules*, which it is desirable to correct. Having taken no copy, I don't know whether the fault is with me or the printer, but what I fully intended saying was this: "Probably, it would be overstating the case to say, that with little grooming, half the attention and feed, and no disease, they will out live the laboring lives of *three* (3) horses, and do the whole work of each." Thus, if the average termination of a horse's *working age*, including all that die from disease, exposure and the effects of labor, or are rendered unfit for its performance, be fixed at 16 years, deduct from this 4 years before it should commence, we have 12 years as the average working age of the horse; and if the average life of a mule be 40 years, including all that die from disease and the effects of labor, deducting 4 years for the colt, we have 36 as his working age. This I have no doubt is overrating the endurance of a mule in all the privations and hardships he would have to undergo in ordinary employment; but I am sure the full capacity of the horse is given for our country, including all that are disabled from unsoundness and otherwise.

It has been asserted that the natural age of the ass is nearly twice that of the horse, and that the hybrid combines in himself the ages of both. This assertion requires proof, and it is for the purpose of eliciting information on this subject rather than imparting it, that these suggestions have been made. It is to be hoped some of your readers will do us the favor to communicate some facts to enlighten us on this point.

Buffalo, April 8, 1841. R. L. ALLEN.

Mississippi Agriculture.

MESSRS. EDITORS—I take it for granted that from the deep interest you feel in the advancement of agriculture throughout the country, you will not hesitate to lay before your readers the accompanying bill,* recently enacted in this state. It was drawn up by a citizen of this county, and received the sanction of the people's representatives with great warmth and cordiality. The destructive and desolating consequences of the entire neglect of our citizens of all the other branches of husbandry and agriculture except our staple, and the wild and restless spirit of speculation which pervaded the whole community, has carried with it its antidote. This bill is the omen of an utter change in the policy of the citizens of this state. With a degree of energy peculiar to the people of this new and growing country, a spirit for the improvement of her native stock by importations from Kentucky and from abroad—a desire to become independent of other states for the necessaries of life, by the application of labor and capital towards the raising of her own supplies, and a determination not to be excelled either in the quantity or quality of her products, has aroused a laudable and noble rivalry among her own citizens, which cannot but be productive of much good to the country. A gentleman from Kentucky has recently settled in an adjoining county to this, with some choice specimens of improved Short Horn Durham cattle, (among them I find the cow "Julia," whose portrait was published in the Cultivator,) several imported Berkshire, Leicester and Grazier hogs—several genuine imported South Down and Saxony sheep, and a number of mixed blood sheep of a superior quality. Other gentlemen in the same county have recently received some fresh importations of Berkshire hogs. The cross of these fine bloods on our native stock cannot but prove most beneficial. The contrast too, will be so great as to create a general desire to participate in the improvements going on. You will perceive too, from the bill, that even in these wild woods we expect to support annual fairs, for the exhibition of fine stock and the products of domestic industry. In justice to you I cannot fail to add, that the "Cultivator" has been seriously instrumental in getting up this feeling, and by way of encouragement I shall embrace the earliest leisure day I have towards procuring you subscribers. CINCINNATUS.

Tallabusha Co. Miss. 6th March, 1841.

MESSRS. GAYLORD & TUCKER—I am much obliged by Mr. Thurber's remedy for blind staggers in pigs; had I known it sooner, it would probably have saved me $30. I would like to have him, or some of your correspondents, go a step further, and say *what are the causes* and *preventives*? It is stated that it is owing to too great confinement, but I have known it occur occasionally when they had not been kept up close.

Also—can any of your correspondents say whether sows may, in ordinary health and condition, continue to breed till 6 or 8 years old, two good litters annually, or whether by obtaining more than one, the health of the sow or her capacity for producing *strong, good and perfect pigs, and large litters*, is impaired? Isolated animals will not answer the above query; a considerable lot of sows well taken care of for a series of years, will alone solve it satisfactorily. R. L.

USEFUL RECIPES.

TO KILL LICE ON CATTLE.—Feed them a quantity of sulphur, a small dose at a time, mixed with cut roots or other feed. It will affect the blood and kill lice. F. W. SIPPERLY.

FOR KEEPING APPLES THROUGH THE WINTER.—Gather them without bruising and after they have laid a few days to sweat, barrel them, putting a little dry straw at the top and bottom and around the edges in the barrel; let the barrels lay in a dry place in the air till if unpacked they would freeze, (whether they freeze in the barrel or not I do not know,) then put the barrels in a dark cellar to use when you shall think desirable. I have kept apples in this way till in August, and on one occasion till I gathered winter apples the next year.

TO CURE THE BOTS IN HORSES.—Pour down the horse a quarter of a pound of alum dissolved in a pint of water, (milk warm;) in five or ten minutes after pour down him a pint of Linseed oil or other mild active purgative; in ten minutes the horse will rise and eat. AMICUS.

CURE FOR SCRATCHES ON HORSES.—Feed a horse one or two table spoonfuls of sulphur per day, (in order to cleanse the blood) for three or four days, wash the feet in clean soft warm water, then put on dry sulphur and wind a linen cloth around the sore, and twice or three times a day drop in dry sulphur between the cloth and the sore. Be careful to keep the feet dry, as it is of no use to doctor the feet until the blood is put in order. This seldom fails in the worst cases.

New Haven, Vt. 12 mo. 1840. A. M.

PROTECTION OF VINES.—Plaster sprinkled over squashes and cucumbers when they *first come out of the ground*, will protect them from that "little destroyer," the striped bug.

CURE FOR CORNS.—A subscriber to your valuable paper told me a few days since how he had cured several corns, which had compelled him to wear mocasins. He paired them off with a sharp knife, bathed them freely with Spts. Turpentine, and laid upon them a linen cloth which he frequently wet with turpentine. In a few days the corns came out root and branch, to the great relief of the sufferer. The remedy is simple, attainable by all, and from its effectual cure in the case cited, is worthy of a trial by such as are suffering from these painful visitants. J. R. S.

Fultonville, Jan. 26, 1841.

CURE FOR POISONED LAMBS.—In your Feburary number you published a recipe for the cure of lambs poisoned with "withey," which shrub answers the description of what is here called "low laurel." I herewith send you a recipe which is far preferable, as the materials cost nothing and are always at hand. Take two quarts of red or yellow sand from under the soil, pour in water enough to cover it, boil it a few minutes, then drain off the water and give two or three table spoonfuls at a time; three or four doses generally effects a cure. I have never known this to fail. OTIS SOULE.

TO RELIEVE BLOATED CATTLE WITHOUT FAIL.—Take about a wine glass full of powder, mix it with cold hog's lard, make it into balls and put it down the creature, and commence driving it about and it will very soon relieve the patient. I have seen the above remedy applied frequently and have never known it to fail. *Shaftsbury, Vt.* J. M. OLIN.

TO CURE THE BLACK TONGUE.—Take 1 oz. of copperas, 1 oz. of salt petre, 1 oz. alum; to be pulverized and mixed with 1 pint of honey, 1 pint of Jamaica rum or spirits, 1 pint of strong sage tea. The blister on the tongue should be stripped of skin and the composition applied with a swab on every part affected, especially around the roots of the tongue. About 15 or 20 minutes after applying the liquid, swab the mouth well with *another swab* dipped in a vessel of linseed oil; pour 1 gill of the oil down the horse once a day to prevent his throat swelling A. D.

Notices to Correspondents, &c.

To enable us to publish as many of the favors of our friends as possible, we have this month omitted the Dictionary of Agricultural Terms, used smaller type than usual, and given quite a number in a condensed form; but still we have not been able to insert several, to which we had intended to have given place in this number; among these is the Essay of W. A. SEELY, Esq. on Vegetable Nutrition, which, with a number of others, is already in type. We trust our correspondents will bear with us with patience, when they see the efforts we are thus making to publish their favors as rapidly as circumstances will admit. Absence from town during the greater part of the past month, has prevented an answer to several inquiries and private correspondents.

Our thanks are due to J. W. PROCTOR, Esq. for the "Transactions of the Essex Ag. Society for 1840," of which farther notice will be taken hereafter. Can complete sets of the Transactions of the Essex Ag. Society be had? Our thanks are also due to Dr. AKERLY of Staten Island, and C. ORR, Esq. of New-Jersey, for handsome specimens of Indian corn cultivated by them. Also to the Hon. Mr. ELLSWORTH, for seeds of the Tomato and Capsicum, from the Island of Cuba.

Communications have been received during the past month, from F. Rotch, L. F. Allen, A. Walsh, S. Robinson, O. Hussey, W. H. Sotham, N. Darling, J. B. Dean, S. B. Jones, A. B. Allen, T. T. Roberts, P. E. Pease, Cor. Bergen, J. W. Knevels, G. C., A Planter, J. N. Smith, T. R. Hussey, Cephas, S. Homer, Jr., Uncle Jo, One of your Subscribers, (who will see from the crowded state of our columns our inability to comply with his request,) C. M., J. C. Robertson, T. W. Wells, E. C. Frost, F. H. Gordon, G. W. T., S. R., S. Wood, D. G. Mosher, J. N. Keeler, Pearl, R. L. Allen, W. A. Seely, R. L., L. A. Morrell, S. E. Todd, Wm. Kingham, A Northern Man, H. C., O. F. Tucker and B. C. Leavell.

We have unpublished communications from the following gentlemen, received previous to last month, which we have thought best to acknowledge, as it may be some time before we can publish all of them;—S. W. Jewett, S. Robinson, A. C., L. A. Morrell, L. R. Jr., J. M. Dupré, J. Bowen, A. S. Rice, L. B., B. E. Bowen, A. C. Stevenson, M. Y. T., Henry Stephens, E. Westfall, P. Diehl, E. S. B., A Friend to Agriculture, B. S., S. Hecox, Viator, J. Lewis, H. Van Kleeck, J. S., J. Mines, C., J. C. Mather, R. M., J. Cain, S. Wood, L. Durand, S. H. Nichols, C. G. Page, J. P., S. Henkel, P. P Bonesteel, S. Stewart, and Senex.

☞ The proceedings of the Executive Committee of the N. Y. S. Ag. Society, at their monthly meeting on the 21st ult., are necessarily deferred till next month. The next meeting of the Committee, it should be remembered, is to be held on Wednesday the 19th of May

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* The bill enclosed, is an Act of the Legislature of Mississippi, incorporating a State Agricultural Society, with auxiliary Societies in the several counties, for the details of which we cannot make room.—*Editors.*